COAL AGE

Vol. 12 NEW YORK, AUGUST 11, 1917 No. 6

Vacations in War Time

COMMON sense is the ability to discern values. In the matter of vacations, the rating in common sense averages very low. Many men look on a vacation exactly as the negro whose wife was dying, looked on his mother-in-law. The wife begged as a dying request that Bill give her a big funeral and ride in the first carriage beside the deceased's mother. Bill remonstrated, but finally agreed, saying: "Well, Liza, I'll do it, but it's gwine to spile the who' day fur me."

Lots of coal men start on their vacations in the same spirit. They believe the whole organization will go to thunder while they're gone and want a daily report mailed them to prove it. If a live-wire subordinate takes hold and boosts production with lowered costs, these supposedly indispensable officials are alarmed, rather than pleased. They forget that wise corporations base their estimates of an official's value to the company largely on that officer's ability to build up a competent corps of assistants.

The president of a large industrial concern called in a department manager one day and said: "If anything happened to you, who is there in your department fitted to take your place?" The manager, not knowing what was in the president's mind, and thinking to show how necessary he was to the business, replied that he didn't think there was anyone under him of high enough caliber to fill the bill. The president said nothing, but a few weeks later another department manager was promoted to a high office because he had a man ready to fill his place, and therefore could be promoted without disrupting his department.

That man is to be pitied who has been harnessed to the same job 10 or 20 years and who boasts that he has never lost a day. He not only does not know the joys of a vacation, but he is ignorant of what has kept him from making progress.

The most fertile soil becomes sterile without rest. A similar law applies to each individual. A vacation stirs both brain and blood and gives us a chance to discover how small we are in the scheme of things.

Vacations are necessary to the life of business. A big man in the mining game recently made this clear to his executives when the question was raised as to whether vacations had better be curtailed this year on account of the war. This man said *no*. Then he explained that vacations for his men were based on the fact that they would produce more in fifty weeks of work and two of rest than if they worked fifty-two weeks straight.

Men, don't hesitate to ask for a vacation this year. Go away and fit yourselves to deliver the goods this fall when the maximum effort will be required of each of us. Wellsprings of energy are not to be found in muscles and minds that are kept drawn taut over too long stretches of time. Exercise common sense, which is but the ability to discern values.

Ideas and Suggestions

Finding the Size of Rope Required

By W. B. Crowl
Fairmont, W. Va.

A great number of the new coal-mine operations are so situated that an inclined-plane machine is required to lower the loaded cars to the tipple. With such an installation one of the problems that confront the manager is the size of and the material to be employed in the haulage rope, in order to make the lowering operation safe without using an excessively large rope and thus incurring unnecessary expense. By using the accompanying charts this problem can be readily solved.

Example—To find the size of rope necessary to use on an inclined plane 400 ft. long, 25 per cent. slope, with

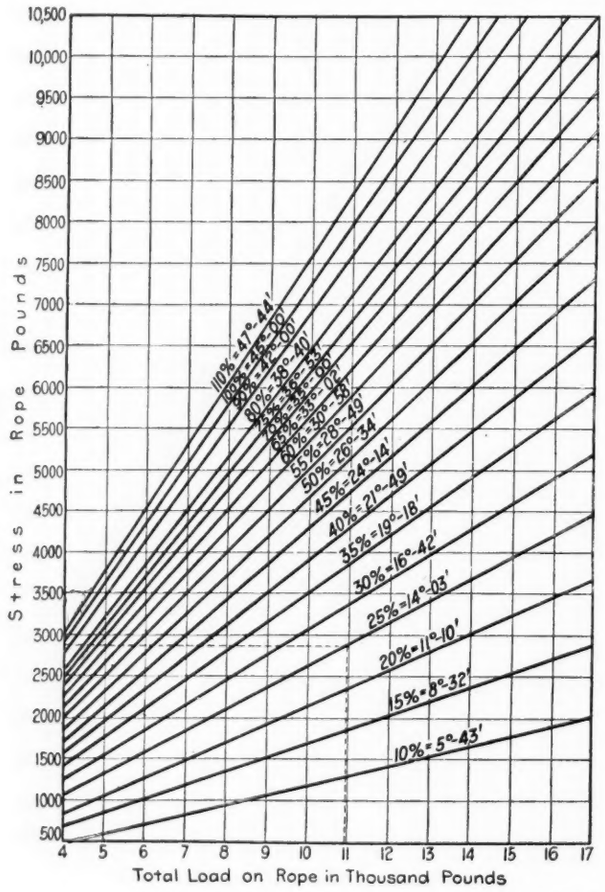


CHART 1. SHOWING STRESSES PRODUCED IN ROPE BY VARIOUS LOADS AND GRADES

two loaded cars in the trip; capacity of cars, 1½ tons each; weight of empty car, 2000 lb.; weight of coal, 1½ tons (1½ × 2240 = 3360 lb.), making total weight of loaded car 5360 lb. The weight of two loaded cars will thus be 2 × 5360 = 10,720 pounds.

Assume that it will take a ¾-in. rope weighing 0.89 lb. per ft.; 400 × 0.89 lb. = 356 lb. = weight of rope. The total load on the rope will then be 10,720 + 356 = 11,076 pounds.

From chart No. 1, starting with a total load of 11,076 lb. and following the vertical load line to the 25 per cent. grade curve, the stress in the rope is found to be 2875 pounds.

Using this stress in the rope with chart No. 2 as shown by the dotted line, a ⅝-in. extra-strong cast-steel

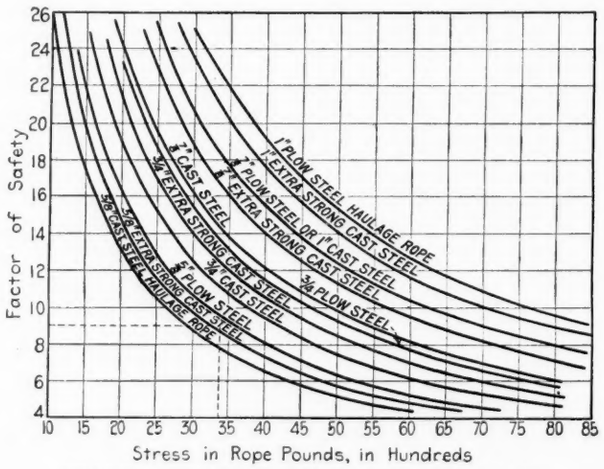


CHART 2. SHOWING STRESSES IN ROPE AND CORRESPONDING SAFETY FACTORS

haulage rope will be found to give a factor of safety of 9, which is sufficient. A rope having a factor of safety between 7 and 10 will give satisfactory service, but any larger factor will make it stronger than is necessary.

The Value of an Engineer to a Mine

Many coal companies, especially the smaller ones, do not realize the value of an efficient engineer in their mining operations. It is true that many of the smaller companies cannot afford to employ an engineer regularly. However, such concerns can easily arrange to secure part of the services of an independent engineer or a local consulting firm of engineers.

It nearly always happens that a mining company regrets adopting the cheap plan of having the mine foreman set the entry and room sights with a compass. Such work is inaccurate, and a great loss of coal is sure to follow the practice.

Economy in mining can be secured only where careful engineering has enabled a mining company to build short haulways with all excessive grades eliminated. The workings must have a well-planned system of drainage; otherwise high costs will eventually result.

The engineer insures an intelligent design for the company houses and other mine buildings. He is also available to make drawings of parts when machinery is broken. Don't belittle the value of the engineer in mining. He is one of the cheapest of all the assets a coal company can possess.

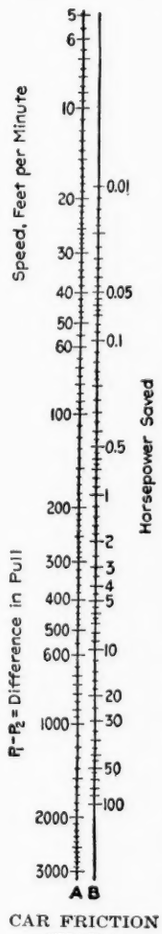
Let's Be Men

The dictionary says: "Man is a human being."
That's about as far as some of us get.
A real MAN is a human being plus.
And a large part of the plus is the ability to give the other fellow the benefit of the doubt.
That's pretty nearly an infallible test for a MAN.
Do we believe the other fellow is trying to help us or hinder us?
If we are big enough to believe he is trying to help us, especially when there is a doubt, we are big enough to be MEN.
Are we?
Abraham Lincoln was a MAN. He expressed his opinion when he said, "With malice toward none and charity for all."

Determining Mine-Car Friction

By N. G. Near
New York, N. Y.

Coal producers seem slow to adopt the antifriction type of bearing in preference to the old plain type, and it is difficult to understand why this is so. Perhaps the average engineer or mine operator has not paused long enough to think the matter over. Perhaps he does not know how much power is going to waste daily because of the use of plain bearings. Perhaps he hasn't thought of the fact that lost power means lost money. To assist the operator, therefore, I have developed the chart herewith shown. This gives the horsepower saved under various conditions, in column *B*. For example, let us suppose that a given car was so poorly fitted with bearings that it required 2000 lb. to pull it, which is an exaggerated case. Let us further suppose that the speed of the car is 200 ft. per min., which is slow. Now let us suppose that roller bearings were substituted for the plain bearings and that the pull became 1000 lb. instead of 2000 lb. The saving would be 1000 lb. In other words $P_1 - P_2 =$ 1000 lb. Find the 1000 in column *A*. Find the 200 also in column *A*. Then find the point midway between these two. Opposite this mid-point is the answer—the power saved by using roller bearings instead of plain—about 6.1 horsepower. It wouldn't be a bad plan to provide one of your cars with roller bearings and do a little testing "on your own hook." It is not a difficult matter to determine the pull required to move a car by the use of a dynamometer or tractometer. By exercising a little judgment and ingenuity, a home-made dynamometer employing springs can be developed by means of which the actual pull in pounds can be closely approximated. Then, by applying results to the chart the horsepower saving of roller or ball bearings over plain bearings is soon found. There is no question but that the "frictionless" type of bearing is a great money saver. Friction is a needless waste that should be overcome wherever possible.



CAR FRICTION CHART

The range of this chart is great enough to easily cover any mine car, varying from 0.01 to 100 hp. and from a speed of 5 ft. per min. to 3000 ft. per min. or from a difference in pull of 5 to 3000 pounds.

How About the Company Man?

During these times of agitation over wages, scarcity of labor and high cost of living, the question has often come to my mind, Does the company man get a fair deal? By company men in this case I mean inside day men other than drivers and rope riders. In most mines of Colorado, as far as I am familiar, these company men, although listed on the payroll under a certain occupation and following that line for the most part, have to be able to do almost everything.

If there is a wreck, the nearest company man must fix up the track and help get things going again. If some loose rock is found that needs immediate attention, the company man must timber it up. He is called upon to fix "bull wheels," do pipe work and maybe a little electrical work. In short, to be a satisfactory company man he must have knowledge and experience, which can be acquired only by years of "inside employment."

But consider the drivers, rope riders, and in many cases the inside hoistmen. In a majority of cases, especially during late years, they are mere boys. A willing and active boy with average intelligence will make a pretty good driver or rope rider in a few weeks. He is bound to be more or less irresponsible. He hasn't a wife and children dependent on him, but nevertheless he draws the same or about the same pay as the old experienced man whose judgment is so constantly required.

Suppose we compare the "company man" with the "digger." Most company men are, so to speak, graduate diggers. They have been through it all, and being intelligent and experienced, they are selected for company work. But to be satisfactory company men, they must know more about mining than the use of pick and shovel. But how about the pay? The company man in Colorado gets $3.25 to $3.50 a day. Would a digger be satisfied with that? If he can't make around $5 a day, he isn't likely to stay long, for he knows there are plenty of places where he can make it.

I have heard a good company man say to the boss, "Can't you give me a room somewhere? I want to make a little more money." But the boss would answer, "Yes, but Bill, I've got to have you on timbering and track work; I can get lots of diggers." Then Bill either goes back to work or has to move his family to another camp in the hope of getting a job digging. Is it fair?

Perhaps this is not only true of mining. In many industries there are men whose faithfulness and skill keep them from more profitable employment. The bulk of their work requires neither quality, and their pay is fixed by the character of that inferior work while their ability to do work requiring real skill makes the boss hesitate to part with their services. Thus ability and steadiness hang as a ball and chain about their feet.

Location and Construction of Mine Tracks—III

By J. McCRYSTLE
Minersville, Penn.

SYNOPSIS—*This article, which is the third of the series, deals with the lateral location of the tracks both below and above ground. Curves within the mine are necessarily of a much shorter radius than those on the surface, but there is no good reason for making the standard mine curve the shortest that the cars will traverse without locking bumpers.*

WHERE the pitch of coal measures is heavy, the haulageways are driven to follow along either the top or bottom slate of the bed at a grade sufficient to afford good drainage or balance the draw-bar pull on the empty and loaded cars. When the pitch is flat, the entire mine is projected and developed along definite lines. In light, rolling pitches, the problem is more complex, compelling a use of both the grade and projection methods, and frequently where there is more than one bed, a close adherence to the lines of any past workings.

As the track must conform to the headings or gangways as they have been driven, some system must be employed in order to have them driven symmetrical.

In the heavy pitching beds, if the slate is followed too closely, many irregularities and sharp turns will result. To preclude this, a definite minimum radius curve must be adopted and a simple method to attain this established, which the miner can understand and use conveniently

Where there is "double timber" or props at regular intervals, what is known as the "chord-offset" method will be found useful. The offset or distance in the dark for any set is ascertained by squaring the established distance between the centers of sets of props and dividing by the radius. Let

D = Offset, or distance in the dark in feet;
C = Distance in feet, center to center of props;
R = Radius of the curve;

then

$$D = \frac{C^2}{R} \text{ (See Fig. 6)}$$

In the case of a 40-ft. radius curve, a rib radius of 35 ft. and timber placed 5 ft. between centers, substituting we have

$$D = \frac{25}{35} = \frac{5}{7} ft., \text{ or } 8\tfrac{1}{2} in.$$

Any two timbers in line on the gangway are then taken, and at a point 5 ft. from the proposed point of curve a prop is placed 4¼ in. (one-half of 8½ in.) out of line of the aforesaid two sets. Then the prop just erected is used to line with the prop at the point of curve, and the next is offset 8½ in.; and so on, 8½ in. on all subsequent props until the desired curve is completed.

In the event that no timber is being used, the same results can be attained by driving points on line at definite intervals in the ties or roof, C is then made the distance between the points, R is the radius intended, and D is the offset distance, the first offset being but half the regular offset.

Where the headings or tunnels are driven on transit lines, offsets are taken at from 5 to 10 ft. from the line for any curves. Fig. 7 shows a typical plan for driving by this method, which is preferred for long or large radius curves.

It will be noticed that the lines overlap. This permits setting up the transit a convenient distance from the working face, so as not to interfere with the work. The heading is at no time without line. A few days are allowed for any delay arising in the establishment of new lines, and the points are at a safe distance from the blasting at the face.

To Determine the Most Economic Radius Curve To Use Underground

To assist in attaining the best possible track layout underground consistent with the expenditure entailed, the conditions governing the radius of the curve should be analyzed before any standard radius is adopted.

On account of the high cost of turning curves, the additional time it would take to drive those of large radii and the amount of the product necessarily tied up by

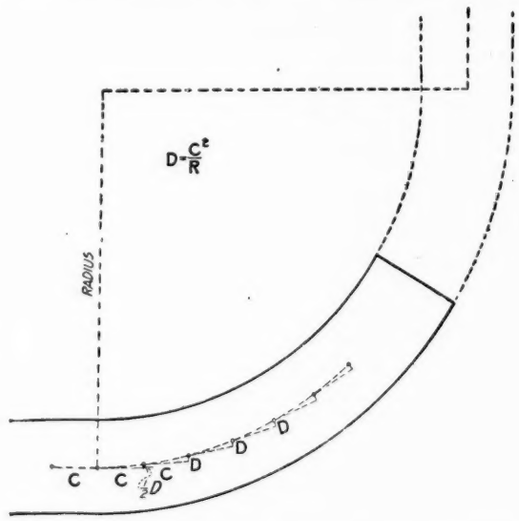


FIG. 6. METHOD OF DRIVING CURVES BY OFFSETTING

large curves, the radii must be much shorter than those permissible on the surface. However, there is no reason in installing the smallest curve that cars will travel around without the bumpers interlocking, merely because the initial cost is low.

An ideal curve would be one with which the sum of (1) the initial cost, (2) the maintenance during the life of the curve and (3) the expense of traffic haulage will be a minimum. The consummation of this ideal can be approached only by assuming curves of various radii and estimating the costs of the several items.

Unless occurring at a site where the roof is poor or the bottom heaves, the shorter the curve the lower will be the initial expenditure. In estimating the cost of curves, certainly, on the shorter ones the cost of the

gangway or tunnel required to reach the point attained by the larger curves should be considered, particularly as it is customary to leave considerable pillar each side of a tunnel or main heading. When turning curves of large radii, the wide part of the opening just beyond the frog can sometimes in the heavy pitches be located in solid rock, thereby dispensing with the use of timber and obviating any allowance for maintenance.

As the life of curves is frequently over 30 years, and wood timber has a serviceableness as low as 18 months, the items of labor and material for timber removals, in addition to the risk of a derailed car knocking down the

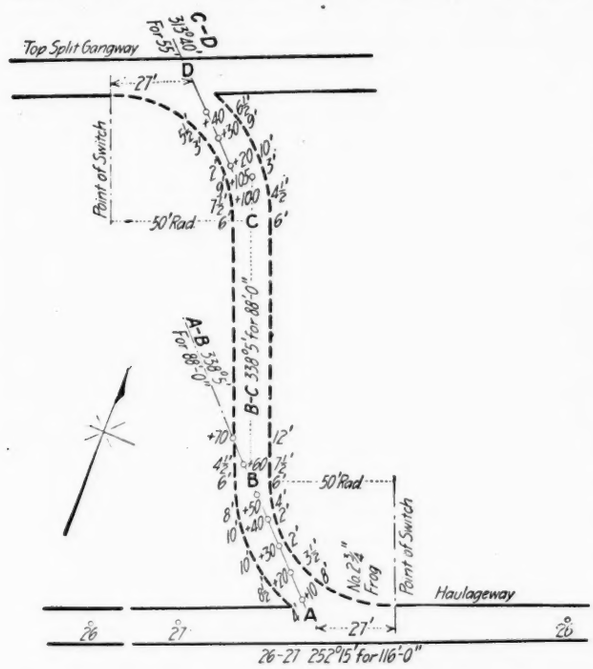


FIG. 7. LINES OF SIGHT AND OFFSETS FOR DRIVING CURVES

roof supports, with the delays in traffic incident to retimbering, must be thoroughly considered. The use of steel timber will be found advantageous, for the long spans encountered at locations where a semipermanent job is required and no "heaving" or "squeezing" is to be expected.

In turning off tunnels where several beds to be worked lie close together, a lower upkeep will be realized by a "wing" tunnel to the outer bed and continuing on the same line to the inner ones, than by having a number of wide areas to maintain from a number of curves off the main haulageway. This also forestalls the cramping of the switchwork and radii, which closely situated veins ordinarily demand.

Viewed solely from the haulage standpoint, the determining factors of the curve radius can be covered under two heads: (1) The cost of resistance due to curvature on the total estimated number of cars to be hauled; (2) the probable number of cars to be hauled in each trip and the speed of haulage.

The amount of resistance due to curvature varies with each type of car, and to a lesser degree with each car of a given type. The resistance expressed in terms of grade with curves of from 30- to 100-ft. radius, 42-in. gage, 42-in. wheelbase, will run 0.015 ft. to 0.025 ft. per 100 ft. of track for each degree of curvature. That is, with a 50-ft. radius or a 115-deg. curve, moderately clean track, fair running cars with both wheels keyed to the axle, approximately a 1.8 per cent. grade would be necessary to equal the same drawbar pull as on a tangent. A smaller compensation would be sufficient where the wheels turn loose on the axles and the wheelbase is less.

The value of the radius expressed in degrees can be obtained by dividing 5730 by the radius in feet. This formula will have to be employed especially in small radius curves. The actual arc is used to find the degree, rather than the 100-ft. chord, the practice on standard-gage roads. By using the actual arc, a 50-ft. radius $= \frac{5730}{50} =$ 115-deg. curve. By the use of the 100-ft. chord, a 50-ft. radius $= \frac{50}{\sin \frac{1}{2}d} =$ 180-deg. curve, showing a disparity of 65 degrees.

Assuming a curve with a central angle of 90 deg. on a grade of 0.5 per cent. and allowing the same rate of resistance per degree on a 25-ft. and 50-ft. radius curve, the motor in traveling over them would have to mount the sum of the grade and the curve resistance, the equivalent of a 4.5 per cent. grade for 39 ft. and a 2.5 per cent, grade for 78 ft. respectively. From the beginning of the 50-ft. radius to the point of tangency, there would be with the curve resistance the equivalent of 1.96 ft. vertical, while to travel between the same points by way of the 25-ft. radius curve, including the 25 ft. of tangent on each end of the curve to reach the same geographical point, would be a total of 2.02 ft. vertical, or essentially the same vertical rise in both cases.

While actually with the smaller radius curve there would be a lower rate of resistance per degree, this would be more than balanced by the increased resistance due to the slower speed compelled by the sharper curve. If the resistance due to grade and curvature between the similarly located points is accepted as equal, then there remains in favor of the 50-ft. radius the greater speed at which the trip can travel, the reduced danger of cars jumping the track, the greater ease with which the trolley will follow the wire, a haul 11 ft. shorter, and in some cases 11 ft. less of tunnel. With a heading producing six trips per day of twelve 5-ton cars each, this 11 ft. twice per trip would consume enough power to draw one ton 7920 ft. each day, or 375 miles per year.

In estimating the number of cars per trip, the future output, as well as the length of haul, must be considered. The number of cars traveling over a certain haulage daily may sometimes be trebled by a tunnel to other beds.

This increased output may mean the installation of a larger, or possibly the use of an additional, locomotive. If the curves are too sharp, the larger machine cannot traverse them, and this leaves no choice but the additional motor with its expense for attendance and upkeep.

For obvious reasons no compensation is allowed for curvature underground, and if a locomotive is required to work at its capacity, the additional resistance to be overcome due to curvature may be the factor limiting the length of the trip. With the large curve a locomotive may pull through on its momentum, but on a

curve of small radius the velocity must be reduced when the curve is approached.

The general practice in the location of narrow-gage railroads on the surface is to first run a topography survey and then plot this to a suitable scale. If the relative position and elevation of both the beginning and destination of the proposed road are known, it may be found practical to run a rough grade line between them. Using this as a base, sufficient of the surface features on each side may be located to permit any deviation desired from the original base line. Sufficient accuracy is usually attained by using circle levels taken with a transit to the objects and ground to be located, and only in special cases need the topography be located with a wye level or Locke level.

When the location has been plotted and any outcroppings of veins and other influencing features shown, the proposed line is laid out on paper and submitted for approval.

This approval, however, in the case of narrow-gage mine roads, is usually permission to use a certain maximum and ruling grade, and the adoption in general of the layout. It is not intended that the layout be adhered to rigidly, and the engineer is permitted to use his judgment in making any minor changes in the grade or route.

It is an infrequent occurrence that the mine track leaves the company's lands, and no right-of-way is required.

These facts and the comparative flexibility of the narrow-gage road, with its almost unlimited allowance in curvature, render the field work for a narrow-gage road a comparatively simple matter.

As this work is usually assigned to the regular mine engineer corps, which frequently is not particularly familiar with it, the customary methods pursued are given.

One practice in some use is to scale the location off the plan and duplicate it in the field. Because of possible inaccuracies in the preliminary survey, the possible divergence of the approved location from the base line, and the errors in scaling it, this method is not to be recommended.

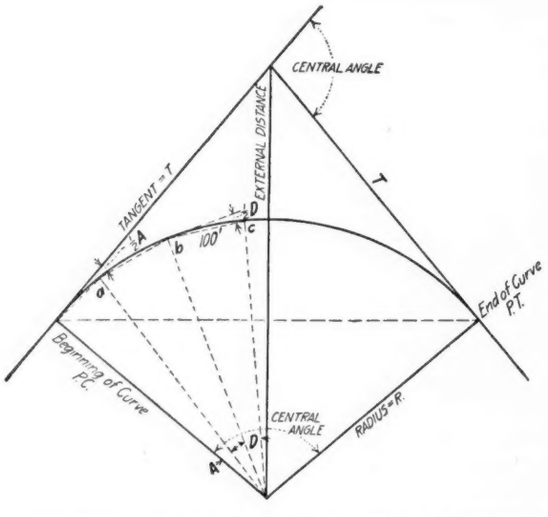


FIG. 8. METHOD EMPLOYED IN LOCATING A CURVE ON THE SURFACE

A better way is to place stakes on grade at 50- to 100-ft. intervals, depending on the nature of the ground, and then use these stakes as a guide in selecting the straight track or tangents. The radius of a curve is partly determined by establishing the point of intersection and measuring the distance from this point to where it is desired to locate the line of curve (see Fig. 8).

The radius required is found by the formula,

$$Radius = \frac{Distance\ measured}{ext\text{-}sec\ \frac{1}{2}\ central\ angle}$$

If the country is heavily wooded and the tangents cannot be selected readily in the field, the grade stakes should be located and plotted and the line chosen. The tangents are then established in the field by measurements from the stakes and the intersection and curves run in.

The prime consideration in most mine roads is to have the grading and excavating a minimum; this, of course, can best be accomplished by the use of grade stakes.

In standard-gage practice, a 1-deg. curve is one on which a 100-ft. chord will subtend a central angle of 1 deg.; a 2-deg. curve, a central angle of 2 deg. with a 100-ft. chord; a 3-deg. curve, a central angle of 3 deg. with a 100-ft. chord, and so on, the radius being calculated by trigonometry from the degree and chord. The curve is easily laid out by deflection angles and 100-ft. chords.

In computing the various parts of a curve, the following formula will cover most cases (see Fig. 8).

R = Radius of curve,
D = Degree of curve,
T = Tangent distance,
E = External distance,
A = Angle subtending chord or sub-chord,
Δ = Central angle.

(1) External angle = central angle; the external is that measured by the transit upon the intersection of the tangents.

(2) Radius = $\frac{E}{ext.\text{-}sec\ of\ \frac{1}{2}\Delta}$, E is found as described above.

(3) Sin $\frac{1}{2}D = \frac{50}{R}$, the angle corresponding to sin $\frac{1}{2}D$ can then be found in a table of natural sines and cosines, and doubling this angle will give the degree of the curve. (See page 233 for short radii formula.)

(4) Tangent = $R \times \tan \frac{1}{2}\Delta$; when the radius is known, before the curve can be staked out, it is necessary to know the p.c. or point where the curve commences. When this is found, the tangent distance is measured from the point of intersection, and will locate the p.c.; measuring the same distance on the line of the other tangent will establish the p.t., the end of curve, or point of tangent.

(5) Radius = $\frac{T}{tan\ \frac{1}{2}\Delta}$. It frequently happens that the point of curve must be located at a certain definite point, as at the end of a bridge or switch. The tangent distance is then measured and the proper radius of the curve calculated from this formula.

(6) The deflection angle for a 100-ft. chord is one-half the degree of curvature.

(7) If there is no table of external secants convenient, use a table of natural sines and cosines, and di-

vide the cosine of one-half the central angle into 1, and then subtract 1 from the result; this will be the external secant. For example, if one-half the central angle is 18 deg., the cosine is 0.9511; dividing this into 1 gives 1.05146, and subtracting 1, we have 0.05146, the external secant.

(8) When the curve is to be staked out at less than 100-ft. intervals, as is the case in narrow-gage work, sub-chords must be used. The angle for the sub-chord deflection is determined by the formula $\sin \frac{1}{2}A = \frac{\text{sub-chord}}{2R}$. The angle corresponding to $\sin \frac{1}{2}A$ will be found in a table of natural sines.

If the angle is known, as is the case with the last deflection for a curve, the formula becomes, $\frac{1}{2}$ sub-chord $= R \sin \frac{1}{2}A$.

The deflection angle for any chord is always equal to one-half the central angle subtending it. For 100-ft. chords, the deflection angle would be one-half the degree of curve. In formula 8 the angle equivalent to $\sin \frac{1}{2}A$ would be the correct one to turn for the proposed sub-chord.

When the radius of the curve has been determined and the p.c. (point of curve) exactly located, the distance is measured from the last numbered stake to the p.c. The stake here located is numbered, and the transit set up over it. If the p.c. is not at the end of an even chord length, it will be necessary to work out the deflection for the sub-chord, as shown under formula 7.

The p.c. is the point of curve in the direction the survey is being run, and the p.t. (point of tangent) the end of the curve.

The first deflection from the p.c. will be the angle $\frac{1}{2}D$ from the tangent line for the distance of the chord. If the second stake on the curve can be put in from the p.c., the angle required is added to the first angle and turned from the p.c. The distance, however, is measured from the last stake. This process continues as far as can be staked out from the p.c., or until the p.t. is reached. The deflection angles should be added until they equal one-half the central angle, which should intersect the p.t., if the work has been done correctly. The measurements are taken each time from the last stake.

If it is impossible to see from the p.c. to the p.t. and all the intermediate points, the transit can be set on any intermediate stake and the curve continued therefrom. When the transit is set up on the curve, the vernier is set at zero, backsighted on the last place over which the transit was set up and the telescope reversed. By turning the vernier to the last angle turned, the line will be tangent to the curve at the set-up, and deflection angles can again be added until the p.t. is reached. The transit should then be set up on the p.t. and can be again turned tangent by reversing the telescope and turning the last angle. The sum of the deflection angles must equal one-half the central angle, and with the angles turned upon backsighting, equal the total central angle. The chords are always measured from stake to stake, as shown in Fig. 8, from p.c. to *a*, from *a* to *b*, *b* to *c*, etc.

In all American handbooks for standard-gage track, and in formula 3 of the foregoing, all calculations, degrees of curve, etc., are based on the underlying principle that a 100-ft. chord determines the degree of curve.

It is obvious that it is not very convenient to use this 100-ft. chord method with short-radii curves, and it is mathematically impossible to use it with curves of less than 50-ft. radius, as will be seen by formula 3.

Many engineers have resorted to computing short tables for their own use for this class of work, but the majority of such tables are decidedly incomplete.

If we assume, however, for the shorter-radius curve that a 1-deg. curve is one in which a 10-ft. chord subtends a 1-deg. central angle, all the numerous labor-saving tables developed in the standard fieldbooks can be adopted and applied to this work by merely moving the decimal point mentally one place.

For example: A 1-deg. curve would then have a 573-ft. radius instead of a 5730-ft. radius; the long chords, externals, tangent distances, etc., would be one-tenth as great. The angle, of course, would not change.

If a 10-ft. chord was thought too short for use, the long chord for two stations (or three stations, as desired) would be taken from the tables.

Or if no standard fieldbook is at hand, the foregoing formulas may be used without any change with the exception of formula 3, which would on the 10-ft. chord basis, be $\sin \frac{1}{2}D = \frac{5}{R}$.

The table entitled "Radii, Degrees of Curve and Ordinates," appearing later, gives degrees of curve on this method for radii from 15 to 200 feet.

It will be found convenient in most cases, when the radius on either the 100-ft. or 10-ft. chord plan corresponds to a fractional degree of curvature, to take the nearest degree and change the radius to agree therewith. For example, if the radius corresponded to 9 deg. 43 min., it will simplify the fieldwork usually to make it a 10-deg. curve, and alter the radius, etc., correspondingly.

(To be continued)

Coal-Stripping Operations

It is only during the past few years that the method of mining coal by removing the overlying drift or surface has been generally recognized as an efficient means of extraction. Early strippings were all performed by hand and, as a result, the depth of cover that could be removed successfully and economically was quite limited.

The development of the steam shovel—the modern juggernaut of mining—has made possible the removal of millions of cubic yards of drift material, overlying coal seams that could formerly be reached only by the usual method of drifting or tunneling. By this means, stripping operations are now conducted to depths that vary, according to the nature of the cover and the value of the underlying coal, from a few feet to 30 or 40 yd. in thickness.

Attempts have been made to establish an economical ratio between the depth of cover that can be economically removed and the thickness of the underlying coal, in different localities. Such attempts, however, have met with only partial success, owing to the great variation, both in the quality and value of the coal and the character of the strata to be removed.

Interesting data, in this regard, will be found in the publication of the United States Geological Survey, entitled "The Production of Coal in 1914," by C. E.

Lesher, p. 626. The reference is entitled "Steam Shovel Mining" and gives the facts regarding the stripping of coal seams, as gathered by the Survey, in different coal-producing states.

A table giving the quantity of coal produced, average thickness of coal seam and cover and cubic yards of earth removed in the year 1914, in the States of Illinois, Kansas, Missouri, Indiana and Oklahoma, shows the ratio of cover to coal to vary from 3.86 in Illinois to 8.14 in Kansas. The ratio for Indiana and Oklahoma is given as varying from 5.07 to 10.

In this connection *Coal Age* draws attention to a most interesting article published in its columns, Mar. 17, p. 468, entitled "Methods Adopted in Stripping Anthracite," by J. D. Warriner. The article contains a large amount of infomation, both historical and present practice, showing the development that this method of mining has reached.

Mr. Warriner gives, in detail, the method of stripping employed in the anthracite region, in the use of the 70-ton "Bucyrus" shovel and the 60-ton "Marion" shovel, which are two types widely used in that region.

Having regard to the economical extraction of coal, *Coal Age* is greatly interested in securing information on this particular method of working and invites a thorough discussion of the subject by those who are conducting similar operations in different states, or whose conditions would seem to invite its adoption. Such a discussion cannot but prove of great value to the coal interests, and we hope for its hearty support.

Explosives Produced in 1916

The total production of explosives in the United States during the year 1916, exclusive of exports, was 252,708 tons, according to a report just issued by the Bureau of Mines, Department of the Interior. The production in 1915 was 230,450 tons, showing an increase in 1916 of 22,000 tons.

As showing the reports of explosives, in the year 1913 the total value was $5,000,000; in 1916 the exports had reached $717,144,649.

The amount of explosives used in coal mining in 1916 was as follows: Black powder, 7,079,041 kegs; high explosives other than permissible explosives, 20,901,405 lb.; permissibles, 26,566,521 lb., as compared with 6,700,558 kegs of black powder in 1915; 22,384,025 lb. of high explosives and 21,841,659 lb. of permissibles. The increase in the use of permissibles amounted to almost 5,000,000 lb., as compared with the preceding year.

In 1916, 82.1 per cent. of the black powder sold was used in the coal-mining industry, while only 3.6 per cent. was used for other mining. Of the total amount of explosives distributed in the United States in 1916, 73.2 per cent. was used in the mining industry as compared with 72 per cent. in 1915. Of the permissibles in 1916, 76.6 per cent. was used in coal mining, while 17.9 per cent. was used in other mining. Of the total explosives, approximately 50 per cent. was used in the metal-mining industry.

The production for 1916 is segregated as follows: Black powder, 215,575,025 lb.; "high" explosives other than permissible explosives, 255,154,787 lb.; permissible explosives, 34,685,240 lb. These figures represent an increase of 17,852,725 lb. of black powder; 19,326,200 lb. of high explosives and 7,335,331 lb. of permissible explosives, as compared with figures for 1915.

Disastrous Explosion at Clay, Ky.

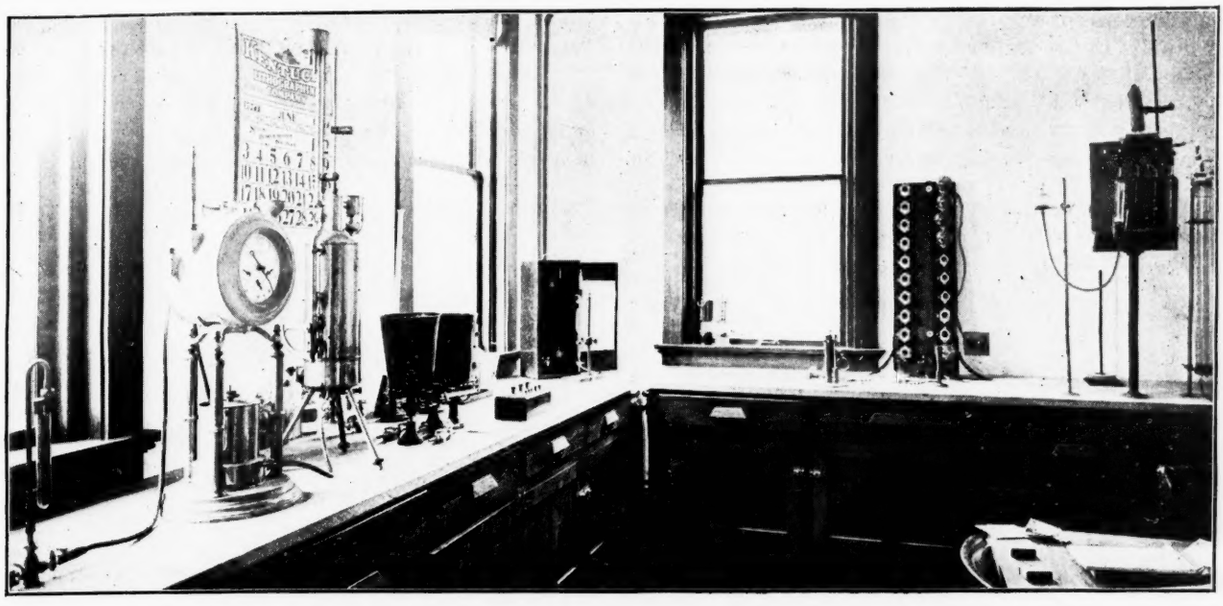
An explosion, believed to have been caused by gas, in the south entry of Mine No. 7 of the West Kentucky Coal Co., trapped 145 miners at Clay, Ky., on Saturday morning, Aug. 4. By midday, Aug. 6, it had been established that 34 men had lost their lives. Sixteen had been rescued suffering from burns or other injuries, while 71 others had been rescued practically unharmed. At the same time it was estimated that 15 or perhaps 20 men were still imprisoned in the entry, all of them negroes, none of whom the rescuers expected to get out alive. The identified dead include 10 white men, among whom was C. P. Wallace, the mine foreman.

On Aug. 6 no statement as to the cause of the explosion had yet been made by C. J. Norwood, Kentucky State Inspector of Mines, who came at once to Clay, or by the officials of the mining company. Some think it was caused by an electric spark or by an open lamp. There is no disposition to connect the disaster with the strike. It is said that the explosion occurred at 7:30 a.m., as the men were going along the entry to work. A second explosion occurred later, and it is thought that this secondary action was due to the fact that the first explosion set off some explosives.

Rescue work was begun at once by the mine officials and the mine-rescue party of the Bureau of Mines was hurried from Evansville, Ind. The St. Bernard Mining Co., of Earlington, made up a special first-aid train and hurried it to Clay. The injured when brought to the surface were taken to Evansville hospitals, on a Louisville & Nashville R.R. special. The dead are being buried as rapidly as possible. Rescue work was stopped for several hours Sunday morning because the fan shaft caught fire. The mine near the shaft had to be flooded with water to extinguish the conflagration. As soon thereafter as the mine was cleared, the work of removing the obstructions in an effort to reach the negro miners still not accounted for was resumed and was kept up all night. Only one body was found on Sunday.

Mr. Wallace, foreman, declined a place on the car which would have taken him out of the mine and remained to meet death while seeking to assist the victims underground. Claude Borders, another foreman, is credited with having saved the lives of 53 mine workers. After the explosion occurred and he realized that the fan had stopped, he, with the aid of some of the cooler men, at once began the erection of a brattice. They closed the mouth of a room, extinguished their lights and lay down. When the fan started, Borders let himself through a door to another entry, groped his way a thousand feet to the shaft, then directed the rescuers to the men, all of whom were brought out. The Kentucky militia went at once to the scene and engaged actively in the work on the ground.

Mr. Norwood spent a considerable part of Sunday in the mine, and through his efforts and those of other rescuers, repairs to the ventilating system between passages No. 4 and No. 5 were pushed forward. Here is where the principal difficulties were encountered.



Laboratory of the Consolidation Coal Co.

By H. A. WILLIAMSON
Consolidation Coal Co., Fairmont, W. Va.

Among other useful activities, the Consolidation Coal Co. has always been a leader in attacking the problems of mining relating to physics and chemistry. It was the first to humidify the air current and to make careful tests of the perfection of that humidification. Moreover, it has for many years believed that when gas shows on the safety lamp, the danger point in operation is too nearly approached to satisfy prudent men. It has therefore looked for lower percentages of gas than the safety lamp will show and has sought to determine increases in the percentage so as to forestall an unsafe condition. Lately, use has been made of the Burrell indicator, which is simpler than flask collection and laboratory test. For such determinations, for commercial purposes and for experimental investigations, the Consolidation Coal Co. has installed a laboratory from which may be anticipated results which will do much to revolutionize the coal industry.

THE Consolidation Coal Co. has just completed the erection of its new chemical laboratory at Fairmont, W. Va. This building and its equipment were designed for the analysis of all fuels and for the testing of all the material used in the construction or operation of the coal mines. The principal work is the analysis of coal, coke, iron, steel and gas.

The building measures 35 x 56 ft., and is constructed of steel, reinforced concrete and brick, the trimming being of stone. It is of fireproof construction throughout. It is three stories high and built of unusual strength, having been erected with the idea that additional stories might be added later. The outside of the building is red brick with whitestone trim of plain but pleasing appearance; the interior finish where it is not stone or steel, is dull-finish yellow pine; the floors in the entire building are of concrete. Inside the building all the furniture is of dull-finish oak with the exception of the table tops and hoods, which are of soapstone.

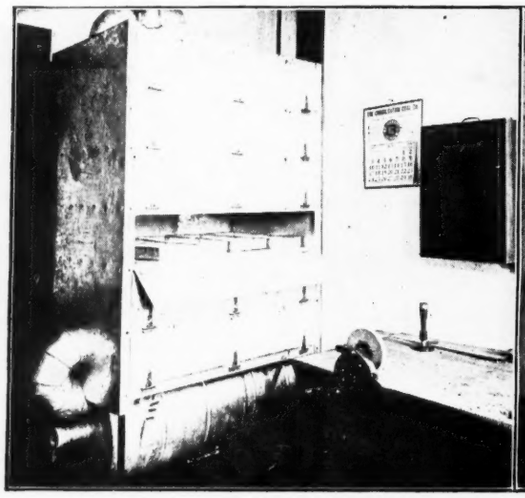
The building is wired for 110-volt alternating current, and where direct current is needed, motor-generator sets are installed for that purpose. The lighting is entirely electric and is of the semi-indirect type. Each room has special inset electric connections for the apparatus using current. The building is also completely piped for natural gas and for compressed air, as well as for hot and cold water.

One of the rooms on the basement floor, measuring 12 x 13 ft., is termed the packing room. This, however, is not an exactly correct designation. It may be defined more precisely as a receiving and dispensing room. It also contains the large oven for drying coal samples. Across the hall from the packing room is the sample preparation laboratory, measuring 15 ft. square. Here is located the grinding and pulverizing apparatus.

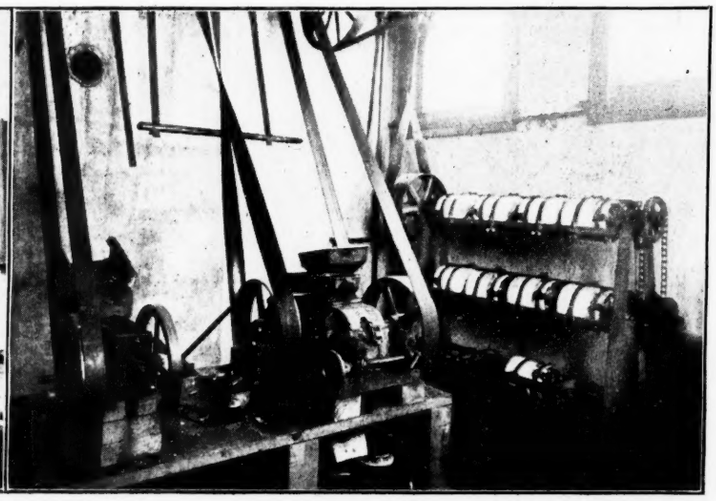
From this laboratory the prepared samples pass again across the hall into the recording and storage room, which measures 11 x 14 ft. In this room all samples are numbered and indexed and such other records made as may be necessary. From this point they pass to the various departments for chemical analysis. The dressing and toilet rooms on the basement floor are convenient and well arranged. The dressing room is large and well lighted, while the toilet room, in addition to the regular equipment, contains two modern shower baths and is finished throughout in marble. At the end of the basement hall is the calorimeter room, to which a space of 11 x 17 ft. is assigned. Here are located the

calorimeters for the determination of the British thermal units in the various coals. The other room on the basement floor contains the heating apparatus of the hot-water system, also an instantaneous heater for supplying hot water and a positive-pressure blower which provides the air for the compressed-air piping system.

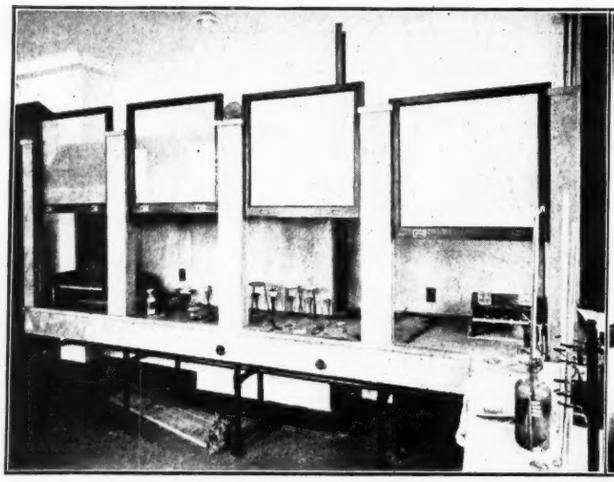
The basement floor is entirely above ground. Nevertheless the floor above is known as the first floor and on it is located the chief chemist's office. This room, measuring 12 x 13 ft., is fully equipped for its purpose, and as an addition to the usual conveniences, has a porcelain lavatory with hot and cold water. Adjoining the chief



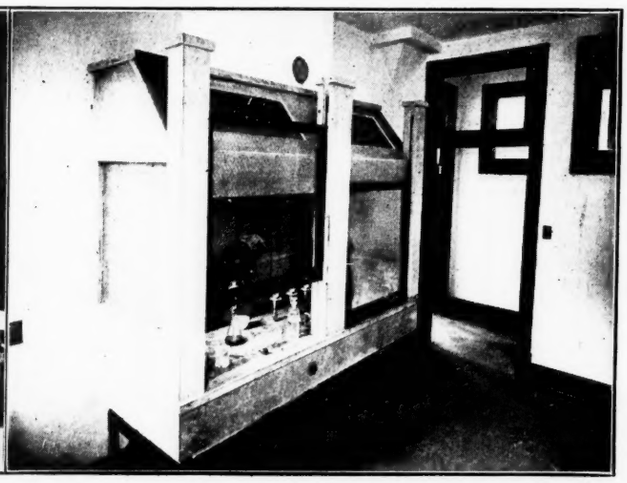
OVENS WHERE SAMPLES ARE DRIED



ALL GRINDING IS DONE IN THIS BASEMENT ROOM

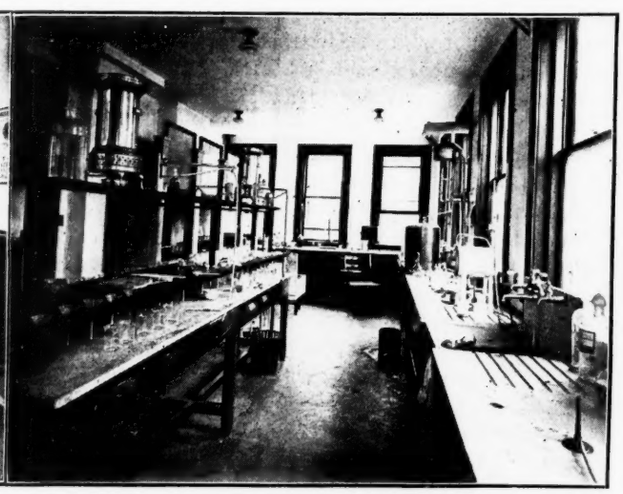


SOAPSTONE HOOD IN GENERAL WORKROOM

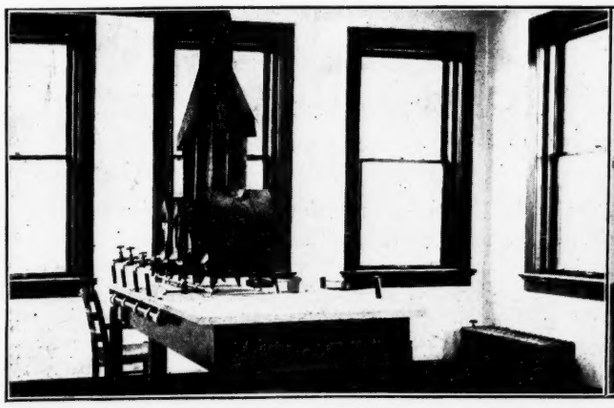


SIMILAR HOOD IN EXPERIMENTAL LABORATORY

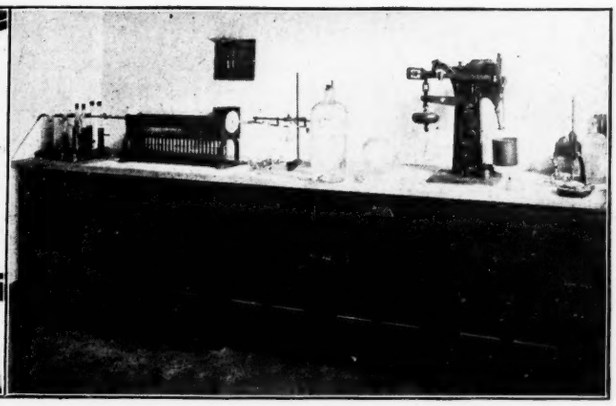
BALANCE ROOM WITH CHIEFS' SANCTUMS IN REAR



WORKROOM WITH WINDOWS IN THREE DIRECTIONS



TEMPORARY MUFFLES IN LARGE MUFFLE ROOM



A CORNER OF THE DISTILLATION LABORATORY

chemist's office is another room, measuring 11½ x 12 ft. This is the office of the assistant chief chemist. It serves also as the library, that necessary adjunct to a laboratory being fully and efficiently equipped. Adjoining this is the balance room, measuring 12 x 14 ft. In this room are two long, heavy tables with the soapstone tops that are so much in evidence throughout the building. On these tables are the various balances. This room is arranged so that it can be completely isolated for the accurate work required.

The general workroom is about 15 ft. wide and 33 ft. long and open to daylight on three sides. Ranged the entire length of one long and one short side is a workbench with a soapstone top, broken in three places by soapstone sinks and fitted below with a continuous line of cupboards and drawers of various sizes to take care of special apparatus and supplies. The center of the room is occupied by a workbench (also with soapstone top) particularly for filtration operations. This workroom is well illustrated on the opposite page.

On one wall of the side of the general workroom is a large soapstone hood. These hoods, of which there are three in the building, are entirely of soapstone, and it is almost impossible to describe them, but the photograph will give some idea of their design. The main hood is about 10 ft. long and 3 ft. deep, while the other two are of the same depth but about 6 ft. long.

The general workroom opens into the experimental laboratory, measuring 11 x 15½ ft. As indicated by the name, it is reserved for special experimental work. It contains one of the smaller soapstone hoods mentioned and illustrated herewith, and is fully equipped with water, gas, electrical and compressed-air attachments.

Across the hall from the chief chemist's office is the gas and mine-air testing room, 15½ x 19½ ft., reserved for the gas inspectors of the West Virginia division and for the instruction of such other gas inspectors as may be sent to the various mines of the company. A corner of this room, showing the work benches, has been selected for illustration at the head of this article. This room is equipped with apparatus for the complete determination of the composition of gas and mine air, and it is also provided with apparatus for the sole determination of the methane and carbon dioxide in mine air. These determinations are carried on constantly for each of the many various mines. Here also are many sets of the new Burrell apparatus for the determination of methane in the mine, as well as various types of electric and oil safety lamps, the practicability of which is being determined by careful tests.

On the second floor is the muffle room, which in most laboratories is extremely hot. This one is comfortable to work in even when the day is warm, for the room is large (the same size as the general workroom below) and is well ventilated on three sides. The fumes and heat are carried off by flues designed for that purpose.

The distillation laboratory, about 15 x 16 ft., is on this floor and contains the third of the soapstone hoods. This room, like the others, is fully equipped, and the accompanying illustration gives an idea of some of the apparatus and also of the arrangement of some of the electrical wall connections, shown by the small steel doors set in the wall. In this room, it may be explained, cement briquets are made and tested.

There are also on this floor the physical laboratory and the chemical storage rooms—the former about 16 x 20 ft. and the latter occupying the further end of the corridor and measuring about 5 x 15 feet.

The remaining room on the third floor is devoted to the mine-rescue appliances. Here are five sets of Draeger apparatus and six sets of the new Fleuss Proto apparatus together with all the equipment that accompanies them—pumps, oxygen tanks, repair parts and tools, meters for testing, etc. Also located in this room is an outfit of Edison electric mine lamps used by the rescue department. This consists of 150 Edison mine lamps, charging rack for 100 lamps with generator set complete, and repair bench with tools.

The "Rescue Room" is 12½ ft. wide and 39 ft. long. The arrangements were not entirely completed, but the intention is that at this point instructions will be given in rescue work and other lectures will be delivered relating to certain lines of chemical work. This is not a recent innovation with the Consolidation Coal Co. It has for some time been giving a course of instruction to its chemists and gas inspectors.

A Waste That is Now at an End

In 1890 automatic stokers began to come in general use, thereby creating a market for coal screenings which up to that time had been thrown away and left in the mines. It is estimated that probably 57,000,000 tons of screenings have been wasted in Illinois for lack of market.—Francis S. Peabody, in an address to the Chicago Section, American Institute of Mining Engineers.

Pennsylvania Bituminous Mine Inspectors Given Life Tenure of Office

BY FRANK HALL
Deputy, Department of Mines, Harrisburg, Penn.

SYNOPSIS — *The act of 1915 passed by the Pennsylvania state legislature, granting veteran mine inspectors in the bituminous region a life tenure of office. Names of inspectors benefited. Features of the act, exemption from examination and need of seeking reappointment, each four years. History of mine-inspection legislation in Pennsylvania.*

A NEW era has dawned for the state mine inspectors in the bituminous region of Pennsylvania. By the provisions of the act of 1915, seventeen of the thirty bituminous inspectors of the state are exempted from passing further examinations held by the state examining board; and by the same act they are relieved of the necessity of seeking their reappointment by the governor at the expiration of the usual four-year term of office. The act reads as follows:

> Any person who has served as mine inspector continuously for eight years and has passed two consecutive examinations for the office of mine inspector shall be exempt from taking any further examination and shall continue in said office without any further examination unless removed or suspended as provided by art. 21 of the Act of June 9, 1911.

Following are the names and dates of appointment of the 17 men who, at the present time, are benefited by the provisions of the act. The names are given in the order of priority, but where there is more than one appointment on a given date, the order is alphabetic for that date:

Thomas K. Adams, Mercer, May 15, 1881; Joseph Knapper, Philipsburg, Mar. 19, 1895; C. B. Ross, Latrobe, May 7, 1897; Elias Phillips, Du Bois, Jan. 16, 1900; Joseph Williams, Altoona, May 14, 1901; F. W. Cunningham, Somerset, Feb. 4, 1903; Alexander Monteith, Patton, Feb. 6, 1903; Alexander McCanch, Monongahela, Feb. 15, 1903; John I. Pratt, Pittsburgh, Thomas D. Williams, Johnstown, and David Young, Freeport, all May 15, 1905; Charles P. McGregor, Crafton, Jan. 15, 1906; John F. Bell, Dravosburg, Feb. 18, 1906; Nicholas Evans, Johnstown, Feb. 27, 1906; Thomas S. Lowther, Indiana, Apr. 5, 1907; W. H. Howarth, Brownsville, and P. J. Walsh, Connellsville, both July 1, 1909.

LONG AND FAITHFUL SERVICE REWARDED

From the list it will be observed that the patriarch of the bituminous inspection service is Thomas K. Adams, who has served his state in the same office for more than 36 consecutive years. But I am only glad to bear witness to the fact that every man on the force constituting the present bituminous inspection board has a record for faithful, intelligent service that cannot be excelled in any state or country.

The benefit of the act, which thus establishes a corps of veteran mine inspectors to whom is assured a permanent tenure of office during good behavior, cannot be doubted. Under its provisions inspectors can give their unbroken and undivided attention to the important work of safeguarding the employees and protecting the property of operators in their several districts, which are the two essential purposes for which the mine-inspection law was enacted.

Few will realize what this exemption from examination means to the veteran inspectors, whose qualifications for thorough and able inspection work cannot be questioned and whose characters are too well known, through years of service, to need further indorsement than is supplied by their record. Preparation for the examination, which was always severe, required weeks of anxious study to refresh their minds with the technical data required for use in the examination.

Aside from this study must be considered the months of labor that subjected each mine inspector to an undignified solicitation in order to secure his own reappointment by the governor. The inspector was thus forced into politics in a way that should be foreign to civil service reform. It can well be imagined that the steady application and arduous work required of the inspector during the few months immediately preceding the date of expiration of his term of office would create a perturbed and unsettled state of mind that would seriously interfere with, and was not conducive to, careful and efficient inspection work at that time.

Inasmuch as the inspector must be a qualified, experienced man, and is required to pass a rigid examination to prove his fitness for office, before receiving an appointment, it seems only reasonable that he should not be repeatedly burdened with this necessity, at stated four-year intervals, during the entire period of his service. Hereafter there will be required of bituminous inspectors but two examinations—one upon entering the service and another four years later.

ANTHRACITE REGION UNDER POLITICAL CONTROL

Unfortunately, the act of 1915, passed by the Pennsylvania legislature, applied only to the bituminous region of the state. Anthracite-mine inspectors do not enjoy its privileges and must still continue to bear the burden of periodic examinations, besides being compelled to undergo the trying and demoralizing struggle of a political campaign, in order to secure their election at the polls, as required by the present anthracite-mine law. In this connection a brief history of the inspection service, both anthracite and bituminous, in Pennsylvania, will be of interest.

Anthracite-mine inspection began with the act of 1870, which created five inspection districts and provided for the appointment, by the governor, of five inspectors. The first five appointments made under the provisions of this act were the following: Frank Schmeltzer, first district; John Eltringham, second district; David Edmunds, third district; T. M. Williams, fourth district; and John T. Evans, fifth district. The region comprised

the four Counties of Schuylkill, Columbia, Northumberland and Dauphin. Besides these four counties the present anthracite region comprises the six Counties of Carbon, Lackawanna, Luzerne, Sullivan, Susquehanna and Wayne. At the present time the number of inspectors has increased from five to twenty-five.

In 1901 the state legislature was prevailed upon, through an ill-advised vote of the anthracite miners assembled in convention, to pass a law making the office of mine inspector in the anthracite region elective by the popular vote in the district, instead of appointive by the governor, as before. Frequent efforts to return to the appointive system have since been made, but have always been defeated through powerful influences, and the office of anthracite mine inspector still remains more or less under the domination of political parties.

The latest attempt to restore the appointive system was made by the introduction of a bill in the present legislature. Its supporters, however, soon realized the hopelessness of gaining its passage and substituted for that bill one providing that inspectors who had passed two examinations and been twice elected to office should be exempt from further examination and election. This bill, however, met the fate of its predecessors.

History of Bituminous Mine Inspection

The bituminous-inspection force was created by the act of 1877, which provided for the appointment of three inspectors by the governor. The first incumbents chosen under this act were the following: William Wilcox, first district; J. J. Davis, second district; and W. L. Richards, third district. The bituminous region was divided so as to make the work in the three districts as nearly equal as possible.

The first district comprised parts of Washington, Westmoreland, Fayette and Allegheny Counties. The second district comprised the Counties of Beaver, Warren, Mercer, Crawford, Erie, Lawrence, Forest, Venango, Clarion, Jefferson, Indiana, Armstrong, Butler and part of Allegheny. The third district comprised the Counties of Cambria, Blair, Huntingdon, Center, Clearfield, Elk, Cameron, McKean, Potter, Clinton, Lycoming, Tioga and Bradford.

Although coal has been mined in Pennsylvania since 1807, according to the most authentic records, no official returns were made to the Commonwealth until 1872, when the Secretary of Internal Affairs, under the act of 1871, began to collect statistics.

Development of Coal Production

It is a matter of surprise that nearly all the counties that produce coal today were producing in 1877. The only counties in which operations have since been developed are Bedford, Greene, Somerset and Sullivan. The last-named produced only 90,538 tons during the years 1891 to 1900. Somerset, however, has become a large producer, Bedford a fair one and Greene will before long assume a place of prominence. The Counties of Susquehanna and Wayne were reported in 1871 as not possessing any coal deposits; but the former is now producing about 750,000 tons annually, and the latter about 100,000 tons.

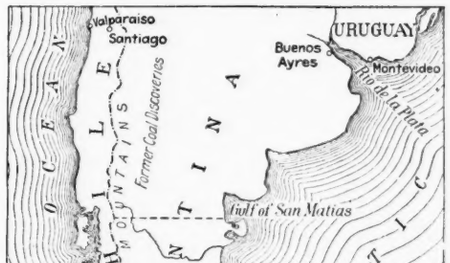
Thirty counties were included in the bituminous producing region in 1877; but five of these, Crawford, Erie, Forest, Potter and Warren, have ceased to produce, while three other counties, Bedford, Greene and Somerset, have become active producers.

In 1872 Great Britain, then the largest coal-producing territory in the world, reported an output of 120,000,000 tons. The Pennsylvania output for that year was 30,000,000 tons. The production of Great Britain has since increased to 325,000,000, while that of Pennsylvania has increased to 260,000,000. Pennsylvania now produces about one-half of the entire tonnage of the United States and about one-quarter of the entire tonnage of the world.

Along with this rapid and tremendous increase in the production of coal have come more comprehensive mining laws and an increase in the number of inspectors. The state Department of Mines in Pennsylvania, as well as the mine officials and mine workers, have been keenly alive to the necessity of protective measures of the most practical and efficient character, and have succeeded in securing the enactment from time to time of legislation that fully covers the details of coal-mining operations. The total number of inspectors in the state is now 55, including the anthracite and bituminous regions. Pennsylvania can well be proud of her success in giving to the great coal-mining industry the best operating laws in existence and at the same time the most expert and capable force of inspectors.

Argentina Finds Some Unhandy Coal

The *Annalist* writes that "extensive coal deposits, which are expected to prove of great value, were discovered early in May in the vicinity of Lake Epupen in the territory of Chubut. These deposits are of considerable thickness and apparently lie near the surface. The fields are about 125 miles from the railroad, but provisionally a motor-truck service is to be established to the railroad, and if the coal turns out to be of satisfactory quality and deposits of sufficient extent the railroad will be extended."



NEW COAL DISCOVERY IN CHUBUT

This field, unfortunately, is remote not only from the railroad, but the port will be several hundred miles, perhaps 800 miles, from Buenos Ayres. It may therefore compete on about equal terms with the Tierra del Fuego coal, which is twice as remote as far as the sea voyage is concerned but quite handy to the sea. It is also more convenient in many ways to Argentine cities than the coals of the San Juan, Mendoza and Neuquen districts, that nestle closely to the Andes.

Coal Mining Investigations—I

SYNOPSIS—*Prevention of coal-dust explosions by watering or use of rock dust. A summary of research work done by the United States Bureau of Mines.*

WIDESPREAD mine explosions start from an ignition of gas or of dust or of a mixture of the two. Prevention of such explosions can be accomplished by removing the sources of ignition or by removing or rendering inert any material that may be ignited. The safest plan is to attempt to do both.

Ignition of gas and dust is possible from open lights, sparks, arcs, or flames from explosives. The use of oil or gasoline safety lamps or miners' electric safety lamps instead of the common oil lamps, the removal of electrical apparatus from places where ignition may be caused, or safeguarding such apparatus so as to prevent its causing ignition, and the use of short-flame permissible explosives in coal that has been properly mined or sheared are precautions that eliminate largely the possibility of an ignition.

Gas ignition can be prevented by providing ventilation adequate to dilute gas at all points where it is generated and adequate to prevent accumulations of gas. In any mine in which open lights are used, it is desirable that the proportion of gas in the returns should not exceed 0.25 per cent. In the returns of any mine in which closed lights are used, the proportion should not exceed 0.5 per cent. Ventilation should be so controlled that not more than 1 per cent. of gas can be detected at any point in the mine except within one foot of the rib or the roof in the neighborhood of blowers.

In attempts to prevent ignition of coal dust, effort is made to prevent as far as possible accumulations of coal dust, and to render inert coal-dust accumulations that do occur by wetting the dust so that it cannot be blown into a cloud, or by adding incombustible matter enough to render the cloud nonexplosive.

Coal-dust accumulations can largely be avoided by replacing all shooting off the solid by shooting after coal has been mined or sheared, using tight cars, loading cars so that the coal will not be spilled over the tops, and frequently cleaning the roads.

Rendering Coal Dust Inert

There are several ways of rendering coal dust inert by wetting. The air current can be humidified with exhaust steam or sprays either after being preheated by passing over and through radiators, or without preheating. If enough steam is added to saturate the air current at the mine temperature, there will be no evaporation of water in the mine. However, in winter it is difficult to keep the current saturated and it is usually necessary to supplement humidifying with some watering.

Watering is used in many mines where humidifying the air current is not attempted. A water car or hose from pipe lines may be used. Water cars are of several types. In one type the water merely dribbles on the middle of the road; in another a spray is thrown on all surfaces of the entry as the car passes. The use of hose to wet all surfaces thoroughly is the best method if done frequently enough. In winter it may be necessary to sprinkle throughout the mine every day.

Deliquescent salts, usually rock salt and calcium chloride, are also used for wetting dust. The former is slightly deliquescent, and does no good except where the air is nearly saturated; then the salt becomes moist and helps to wet the dust. Calcium chloride is more efficient; applied in quantities of about 2 lb. per ft., it will keep a roadway moistened for two to three months, depending on how fast the coal dust accumulates. However, this method does not care for dust on ribs and roof.

The dry method of rendering coal dust inert, termed rock dusting, has been used only during the last eight years. Applying dry incombustible dust to the ribs, roof and floor of entries, aircourses and rooms after they have been cleaned as thoroughly as possible of coal dust affords efficient protection for a long period, until enough coal dust accumulates to make the mixture of rock dust and coal dust explosive.

Atkinson in 1880 and Garforth in 1886 noted in England that after certain mine explosions the tram roads on which there was much incombustible matter showed hardly any explosion effects. It was noted in Germany that fine sand spread over coal dust appeared to prevent the spread of flame from a blowout shot. Although these facts were recorded at the time, the idea of using incombustible dust to prevent coal-dust explosions developed slowly. For this development Mr. Garforth was largely instrumental. In 1908, in the experimental gallery of the British Government at Altofts, England, a stone-dust zone 300 ft. long extinguished the flame from a 170-ft. zone containing much coal dust. Seemingly this was the first occasion on which rock dust was used to check explosions.

At about the same time in France Mr. Taffanel began experimenting along the same lines.

In 1912 a British commission that was in charge of the Altofts experiments issued a preliminary report recommending the use of rock dust. In their report they mentioned five British collieries that were then trying rock dust; since then a number of other mines there have adopted the application of rock dust as a safety measure.

Rock Dusting in Colorado

In the United States rock dusting on a large scale was first tried in a Colorado mine, where sprinkling had caused roof falls. The application of dry adobe dust began in March, 1911, and has been continued to date. The first dusting was by hand, as a blower does not give a satisfactory coating when the dust is first applied; for subsequent treatment a rock-dust blower was used. About 10 miles of entry has been kept dusted now for about four years, at a cost of about 0.3c. per ton of coal produced. The dust is obtained from the country roads in a near-by canyon. It costs $1 per ton, and about 2500 tons has been used. It all passes through a ½-in. screen and probably 20 to 30 per cent. will pass through a 200-mesh screen.

The introduction of rock dusting at other American mines has been slow. In the meantime, by actual tests at its experimental mine, the Bureau of Mines has been

determining the proportion of incombustible that, when mixed with coal dust from the Pittsburgh seam, will make a nonexplosive mixture. The bureau has determined that an explosion once started will not propagate through a mixture containing 64 per cent. of incombustible material if not more than 20 per cent. of the dust will pass through a 200-mesh sieve, and if gas is absent from the air current.

Pennsylvania Mine Coöperates with Bureau

During the latter part of the year 1914 one of the large coal-mining companies in the Pittsburgh seam agreed to coöperate with the Bureau of Mines in a test of rock dusting and certain locations in one of its old drift mines that produces 1000 to 1500 tons of coal daily were selected for test purposes. The mine in the Pittsburgh seam is naturally dry and dusty and produces some gas. Calcium chloride, salt and water are employed to lay dust; electric lamps and permissible explosives are used entirely.

A carload of limestone dust was purchased as most available for use. For the localities to be dusted first, short zones having widely differing character were selected. One zone, about 450 ft. long, was on the main haulage road about two miles from the opening and included a switching point at which there was much bumping of cars and spillage of coal; another, about 560 ft. long, was on a nearly level butt entry; a third, about 1000 ft. long, was in part on a hill where there was considerable spillage and the mules dug up the roadway considerably. These zones were on roadways ballasted mostly with coal dust and coal. The loose coal and rock were cleaned up before rock dust was applied. In a fourth zone rock dust was applied to a roadway that had been ballasted with roof shale. Other entries and butt entries dusted later differed from those already dusted only in that two of them had at one time had calcium chloride applied which was still evident in the greater dampness of the roadways.

The first two applications were made to these zones in January, February, and March, 1915. From 4 to 6 lb. of rock dust per linear foot of entry was applied by hand, being thrown on the ribs and roof so as to give a uniform white coating. That which did not stick fell to the floor and there mixed with the coal in the road dust. At intervals, generally one to three months, these zones have been redusted and extensions to other parts of the mine have been made so that in July, 1916, approximately 6700 ft. has been dusted.

Sampling the Dust

About twice a month samples have been taken in the dusted zones with a specially designed scoop. Loose road material to a depth of about 1 in. is brushed into the sampling scoop from a section 6 in. wide, extending completely across the roadway. The scoop contains a 10-mesh screen. Material not passing through this screen is rejected; the undersize is taken for analysis. Dust brushed from a 6-in. wide section of the ribs and roof makes up the rib sample. The road sample and the rib sample considered together represent a complete cross-section of the mine entry. In the laboratory all material in these samples that does not pass through a 20-mesh screen is rejected; the undersize is analyzed for moisture, ash and carbon dioxide, the weights of samples are recorded, and sizing tests are made with 48-100- and 200-mesh screens. The sum of the moisture, ash and carbon-dioxide contents gives the amount of incombustible present. From relative weights and analyses the average incombustible content of ribs and floor is calculated; the carbon-dioxide content gives an approximate idea of the amount of limestone present; and the sizing tests give a basis of comparison with tests at the bureau's experimental mine in which mixtures of sized material are used.

For the most part the samples taken have shown conditions to be satisfactory; for example, the average of 60 samples of rib and road-dust sections showed a content of incombustible material of 65.2 per cent. It is considered that samples of rib and road dust taken together should show a content of incombustible material of at least 60 per cent. when the proportion of 200-mesh coal dust present is not more than 20 per cent. of the total coal dust present. Even when the samples fell below the standard given, they indicated conditions much better than in zones in which the wet method of rendering coal dust inert was used.

Cost of Dusting

Limestone dust laid down at the mine cost $2.90 per ton. The labor rate was $2.62 per man per 8-hour day. At these figures, the cost of material and labor for the first application of 5.6 lb. of limestone dust per linear foot of entry was $1.76 per 100 lin.ft. A second application of dust by hand at the rate of 2 lb. per ft. cost 62c. per 100 ft., which, on the basis of four hand applications per year, would make an annual cost of $4.24 per 100 ft. of entry. In January, 1916, the same coal company started dusting at two more of its mines. At one of these a little more than 3000 ft. of entry was dusted; in the other more than 7500 feet.

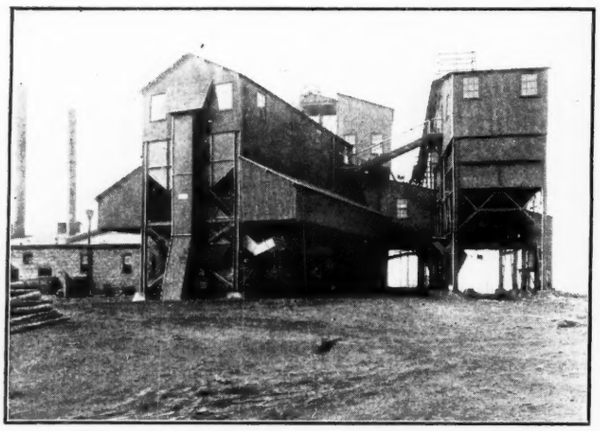
Rock dusting at coal mines in this country has thus far been in the experimental stage. Costs can be greatly lowered. It is estimated that pulverized rock might be obtained for about $1 per ton by using a small pulverizer at the mine to crush shale available there. Manufacturers are working on a machine that may do away with the need for making the first application of dust by hand; it has been shown that reapplying dust may be done better with a blower or similar machine than by hand. By using shale dust and reapplying it with a blower, it is estimated, on the basis of the costs previously given, that $130 per mile a year will safeguard a mine entry or, roughly, one-half cent per ton of coal mined.

Objection has been made to using rock dust on account of alleged danger to the miners' lungs. Pulverized shale dust has been shown to be noninjurious by British commissions which have particularly investigated this point. Dust containing free silica or sharp particles of any sort is likely to be injurious. Microscopic examination is a quick method of detecting the presence of sharp points or edges and the likelihood of danger from this source.

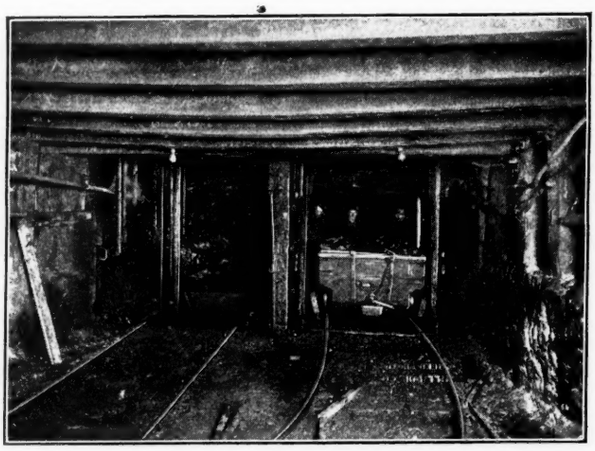
On the whole, tests in this country as well as in Europe have sufficed to show the practicability and suitability of rock dusting as a means of preventing coal-mine explosions.

(To be continued)

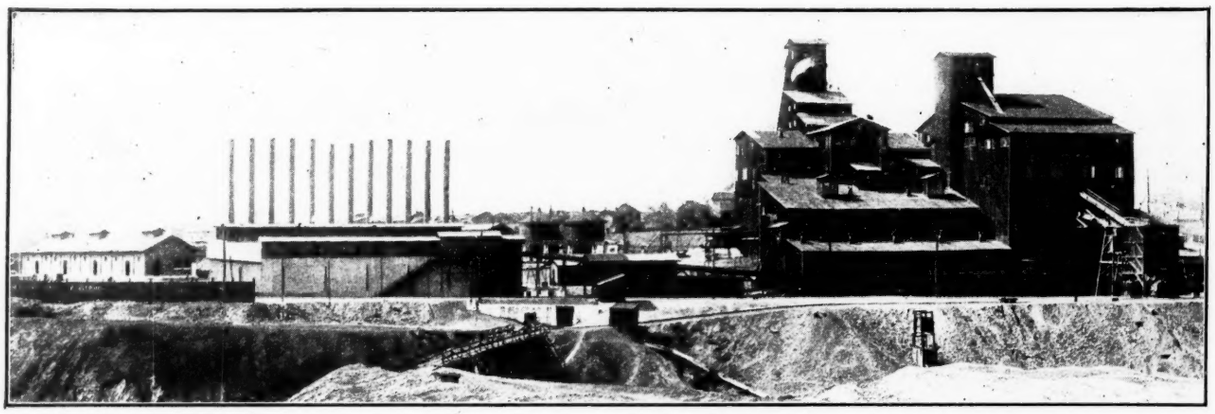
Snapshots in Coal Mining



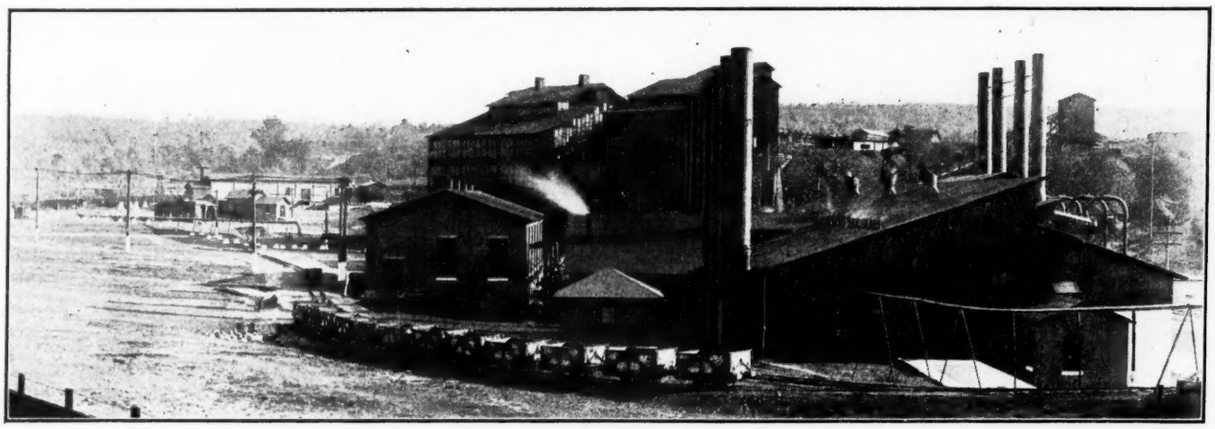
THE CO-OPERATIVE COAL CO.'S SURFACE PLANT AT SPRINGFIELD, ILL. EQUIPMENT FURNISHED BY LINK-BELT CO.



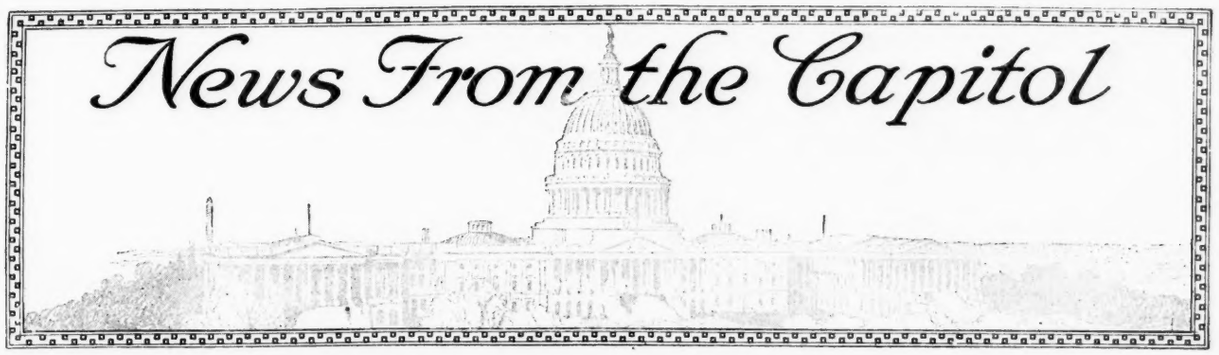
BOTTOM LANDING, VANDALIA NO. 9 MINE, LINTON, IND. A PARKER CAGE OF LONG AND SATISFACTORY SERVICE IS SHOWN



THE CENTRAL COLLIERY, PENNSYLVANIA COAL CO., AVOCA, PENN.; CAPACITY 1500 TONS PER DAY



THE PENNSYLVANIA COAL CO.'S NO. 6 COLLIERY AT PITTSTON, PENN. THIS MINE HAS A CAPACITY OF 2500 TONS PER DAY



Francis S. Peabody thinks a national association of coal-mine operators is a necessary organization. In the formation of the association which is about to be perfected, Mr. Peabody sees "one of the most important steps in advance that ever has been taken by the industry." The fact that Government officials have looked askance upon all trade associations, that the newspapers have been ready to publish articles disparaging to the coal "barons" and that the public has been ever ready to believe all manner of incorrect things about the business of coal production is proof to Mr. Peabody that the time has come "to put into the minds of the people a different opinion of the industry." By conducting a systematic campaign of education and by putting all the cards on the table, a national association can be of inestimable value in getting the industry before the public and before the Government's officials in a true light. Further views along the same lines are expressed by Mr. Peabody as follows:

> There is no industry where the work is harder, where the rewards are less, and where the criticism is more severe than in the coal industry. We must change the attitude of the public toward our industry, as it cannot attain a full measure of success with the stigma of public distrust constantly upon it. We must answer these criticisms in good temper and offer full explanations. In addition to the work of setting us right with the public the National Association of Coal Operators can be of inestimable value to the Government and hence to the industry. It can collect facts and present them to the Geological Survey, the Bureau of Mines and the various bureaus of the Government departments that need such information. It can help us locate, if necessary, the unnecessary consumer of coal. If we reach the point where we must cut off some branch of industry, the association, through its information and statistics, can help those in authority to determine what branch of industry should be cut off. It can make reports to the Committee on Coal Production in regard to labor situations, car troubles, etc. It can make suggestions as to bulletins that we should send out. In fact, the association can be of infinite value to the industry and to the Government.

With regard to the financing of the new association, Mr. Peabody said:

> Publicity cannot be secured without the expenditure of money. Statistics cannot be collected without the expenditure of money. The association should have ample funds at its disposal to do this work. Every coal operator in the United States should gladly contribute to a national association. The other industries engaged in the production of the great fundamental materials are represented by national associations. They spend a lot of money.

While most of the changes made by the conferees in the Pomerene section of the food control bill are technical, numerous alterations were made in the bill submitted to each House for ratification. For instance, the bill authorized the President "to establish rules for the regulation of and to regulate the method of sale, transportation, distribution, apportionment or storage thereof among merchants and consumers, domestic or foreign." The conferees have left out the word "transportation" and inserted the words "production" and "shipment." They also changed "merchants" to "dealers."

In that part of the bill providing for compensation, in case plants, businesses and appurtenances shall have been requisitioned, the measure as it went to conference provided that the producer should be paid a "fair and reasonable compensation for the use thereof or for damages incurred thereby." The conferees propose to omit "fair and reasonable" and use in the place of these adjectives the word "just." The conferees also strike from the provision "or damages incurred thereby." The conferees further restrict the agency for fixing the compensation to the Federal Trade Commission, whereby the bill previously provided that compensation should be fixed by the Federal Trade Commission "or such agent or agencies as the President may designate."

The conferees modified one of the important Senate amendments in part as follows: "That if the prices fixed or if in the case of the taking over or requisitioning of the mines or business of any such producer or dealer, the compensation therefor, as determined by the provisions of this act, be not satisfactory to the person entitled to receive the same, such person shall be paid 75 per cent. of the amount so determined and shall be entitled to sue the United States to recover such further sum as, added to said 75 per cent., will make up such amount as will be just compensation. While operating or causing to be operated any such plants or business, the President is authorized to prescribe such regulations as he may deem essential for the employment, control and compensation of the employees necessary to conduct the same."

In view of the attitude of the coal producers to cooperate freely with the Government, the consensus of opinion here is that the President will not invoke the power conferred upon him in the bill.

Efforts to improve the coal situation on the Great Lakes occupied most of the attention of the committee on Coal Production during the past week. As a result of various conferences between railroad and boat officials and the Committee on Coal Production, means for bettering the situation have been devised. At some Lake ports there has been a lack of boats. At others there has been a lack of coal for immediate loading. In still other instances the railroads failed to have coal shipments expeditiously handled for Lake loading.

When all concerned considered the matter, it became clear that the principal difficulties could have been avoided by closer coöperation. Arrangements have been made to remedy the mistakes that have been made in handling coal shipments through the Great Lakes, and it is believed that the results of the week's conferences will be reflected in the future movement of Lake cargo.

The Committee on Coal Production has received many letters from New England asking that consumers there be allowed to pay prices higher than the maximum in order to get coal. A general fear is said to be prevalent in that region that the fixing of prices will militate against the securing of as large a coal supply as would have been the case had they been allowed to pay enough to induce preferential attention.

In order that the Pocahontas and Western fields should have active representation, Kupper Hood, of Cincinnati, has been added to the executive committee of the Tidewater Coal Exchange.

The excessive heat of last week made it impossible to secure sufficient labor to dump cars at all the piers, but regardless of this circumstance a good showing was made during the first few days that the new pooling arrangement was in effect at all piers. The coal dumped at tidewater was found in excellent condition, but it is expected that the close inspection that is being made will render possible some improvement. While all the figures are not available, the first week of the full operation of the pooling plan has resulted in a material reduction in the detention of vessels and cars.

Decreases in the production of coal in Illinois and Indiana pulled down the general percentage of output, it is shown in the weekly coal statement of the Geological Survey issued Aug. 4. The percentage of full-time capacity was reduced to 75.3, as compared with 75.5 for the week preceding. Returns to the Geological Survey indicate that there was a speeding up of production from the first of June until the middle of July, with a decided slowing down in the latter part of the month recently closed.

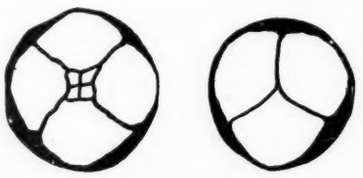
Formal possession of the new million-dollar laboratories of the Bureau of Mines at Pittsburgh, Penn., has been taken by Van H. Manning, the director of the bureau. Elaborate plans had been formulated by the bureau for the dedication of the new buildings, but these were abandoned on account of the war.

For a limited period Frank W. DeWolf, director of the Illinois Geological Survey, will act as assistant director of the Bureau of Mines. Director Manning has consented to an arrangement whereby the State of Illinois will pay Mr. DeWolf's salary and expenses as a patriotic contribution to the Federal Government.

Since the appointment of Mr. Manning as director of the bureau, the office of assistant director has been vacant. Mr. Manning had not been able to find an available man who possessed the qualifications to fill the place. Recently, it is understood, the place was offered Mr. DeWolf. He is said to have declined the place, but on bringing the matter to the attention of Governor Lowden, the latter proposed that the state coöperate with the Federal Government to the extent of furnishing Mr. DeWolf's services gratis for a period of three months.

Three Strands Best in Cotton Rope

Cotton rope is made in three, four, or even in seven strands, but the real contest between ropes lies between those of three and four strands. The four-strand rope cannot be constructed without a supporting core, and since that core is an indispensable part of the rope, its collapse will cause the dislocation of the whole structure. As the core occupies only about one-fortieth of the whole cross-sectional area, it may reasonably be assumed that the force exerted by the alternate contraction and extension of the spiral as the rope passes over the sheaves must tend toward the breaking of this core, the period of endurance being limited by its elasticity and the tension at which it is laid. It is this core which usually collapses first and spoils the rope.



FIGS. 1 AND 2. SHOWING CROSS-SECTION OF FOUR- AND THREE STRAND ROPE

Fig. 3 shows a four- and a three-strand rope of the same thickness, the lengths occupied by a single strand being indicated by the figured lines. It will be seen that the turns of the three-strand rope are more frequent than are those of the four-strand. The strand spiral of a seven-strand rope is almost double the length of that of a three-strand rope and is therefore still nearer a straight line. As the medium with the greatest number of turns is the most resilient and the most capable of disposing of the shocks and stresses set up in the rope, the three-strand rope is to be preferred to the rope with more strands—J. Melville Andreson, before the Engineers' Society of Western Pennsylvania, June, 1917.

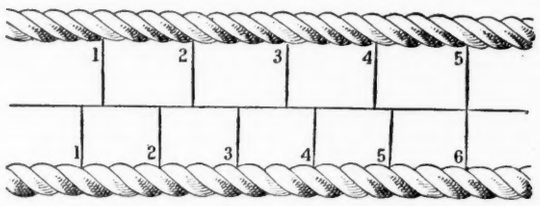


FIG. 3. COMPARING TURN FREQUENCY IN FOUR- AND THREE-STRAND ROPE

In tax-appeal cases it has been shown that the prices of anthracite lands vary from $200 and $300 per acre to $10,000, the smaller values being for lands containing relatively thin coal or coal that was practically exhausted. The medium values of from $2000 to $3000 per acre were paid for relatively small areas with normal coal contents but unopened and generally not of sufficient area for separate operations. The extreme values were for going concerns or for lands so located strategically that they had a special value for the persons who purchased them.—R. V. Norris.

The Labor Situation

General Labor Review

In the anthracite region the mine workers propose to induce the operators to close the mines to all nonunion men urging that the real objectors to closed shops are Industrial Workers of the World who are a menace to the country and to the industry. Button strikes have been numerous, and there have been a few unimportant suspensions of work. The miners of the Susquehanna Coal Co. who contended that the topping of the cars should be 12 in. at the battery and only 9 in. at the tipple, after a three-week strike have agreed to leave the matter where it belongs—with Umpire O'Neill of the Conciliation Board.

In central Pennsylvania labor trouble has moved back to the Somerset County region. Westmoreland and Cambria Counties have quieted down. In western Kentucky there has been some violence arising out of the attempts of the organizers to reach the camps closed to them. As only about 20 per cent. of the mine workers took part in the recent strike, it was clear that it could not be won, so J. P. White, the president of the United Mine Workers, on Aug. 4 ordered the strike terminated.

On Aug. 7, the representatives of the United Mine Workers meeting at Pineville, Ky., passed a resolution calling for a strike in the eastern Kentucky and Tennessee fields to take place today at 4 p.m. The mine workers had called a conference which only a few of the smaller operators could be induced to attend.

In New Mexico there are a number of sympathy strikes. A new company operating the mines of the Victor-American Fuel Co. has refused to recognize the union and to keep the agreement made with the latter company. Thirty-two agitators who started a tent colony were deported. To compel the new company to keep the old contract and to take back the men the employees in several other mines struck.

William Green, secretary-treasurer of the United Mine Workers telegraphed on Aug. 2 to Secretary of Labor Wilson threatening that drastic steps would be taken by his organization if Industrial Workers of the World were not removed from western mining territory.

Using the War for Private Ends

In the anthracite region there is evidence of a disposition to use the war for private ends in a way which casts a doubt, however faint, on the loyalty of the mine workers. The rule suggested by that stalwart old unionist, Secretary Wilson, should be good enough for his successors in the union counsels.

He has said, in effect, "No recognition strikes during the war"; that is, no strikes for the check-off, for a union contract or for a closed shop. In short, the war is not to be used for private ends, nor is it to be used to change contracts already signed. We must all know only one enemy.

The mine worker in Wilkes-Barre, Penn., and the operating concern at Gallup, N. M., should not try to establish a new condition during the war—Should not? Rather, must not! There is no excuse for seeking new conditions. That matter, as Roosevelt would say, is not debatable. Is there any way in which this statement can be made more clear and solemn?

Do not even coax for a change in conditions, for the coaxing is not harmless so long as revolvers are bulging from the pockets of the coaxer. We may reasonably characterize any plan for calling a conference with the operators to establish a closed shop as a coaxing with revolvers, for everyone knows that there will be a general strike or a number of local strikes if the gentle coaxers are not heeded.

The executive board of district No. 1 of the United Mine Workers is preparing plans for a tridistrict executive board meeting to discuss a conference with the operators, at which the union men propose to require that they only shall be allowed to work. Men who won't join their organization must go idle or get into some other industry. Thus we go about to "establish democracy in the coal fields," to quote Mr. White. Some people would say it is autocracy rather than democracy, but the union does not so regard it.

In its usual way the union has recently been coaxing for the closed shop. At the Bast colliery of the Philadelphia & Reading Coal and Iron Co. on July 30 a button strike threw 1000 men and boys out of work and checked production about 1500 tons daily. The strike was settled on Aug. 2. The 3000 employees of the Philadelphia & Reading Coal and Iron Co. and the Susquehanna Coal Co. in the Shamokin district, who went on a button strike, returned to work on the last day of July. These men are employed at the North Franklin, Alaska and Pennsylvania collieries. The 100 per cent. union was established before the men would return to work.

At No. 5 colliery of the Lehigh & Wilkes-Barre Coal Co., at Honey Brook, because 16 men refused to pay their dues, 600 mine workers lay idle. This strike was settled Aug. 4 The Blackwood colliery, the only mine the Lehigh Valley Coal Co. has in the southern anthracite field, was tied up with a button strike on Aug. 2. Eight hundred men and boys were idle in consequence. Industrial Workers of the World are blamed for the abstentions from the union that caused the strike.

The Buck Mountain colliery of the same company, near Mahanoy City, has been shut down several days because 13 members of the United Mine Workers of America did not pay their July dues. The mine workers lose $2200 a day. The 13 mine workers are asked to pay $6.50. Because they will not, the other men not only lose thousands of dollars, but the public loses every day some 7000 tons of anthracite.

But button strikes are not the only manifestations of unrest though they are by far the most important. A strike of drivers, loaders and runners at the Ellengowan colliery recently reduced the output of the 2000 men and boys employed most materially. At Carbondale on Aug. 2 the ice man failed to arrive at the breaker and 50 men employed by the Hudson Coal Co. screening coal went on strike for their ice water. The employees at the Eagle Brothers' washery, which supplies coal for the Eagle Silk Mills struck Aug. 3 for an 8-hr. day and increase of from 25 to 30c. an hour.

Where Topping Should Be Measured

In the issue of July 14 attention was called to the difficulty between the Susquehanna Coal Co. and its men, relative to the topping of cars. Charles P. Neil, the arbitrator, decided that the miners were right in objecting to being required to put the usual topping on cars of unusual capacity. He specified 12 in. as the correct amount of topping on the new cars, but he did not say where that topping was to be measured. Broken coal, like sand, shrinks in bulk when shaken. At the battery chute the topping must be more than 12 in. if it is to be 12 in. when measured at the breaker. The miners urge that 9 in. is the equivalent of 12 in. at the battery chute.

On July 25 the mine workers at the Short Mountain colliery went on strike about this difficulty to the number of 1000. They do not do well to act in this matter. They received a favorable decision before and, if they are entitled to it, will receive it again; and in any event they are under contract to put all complaints before the Conciliation Board.

It must be admitted that the Conciliation Board will probably do little for them, for the evidence, at least on its face, is against them. The place at which topping is always judged is at the tipple. That is where the coal is weighed if the contents of the car are so measured for payment. No one can expect the company to send men around the mines measuring topping at the many working places.

But the fact that the men are probably wrong makes striking the less reasonable. If, when they were right, they waited on the Conciliation Board, why strike now when they appear to be in the wrong? Later reports show that after a three weeks' strike they returned to work.

Seek Weak Spots in the Line

The union is not making any "Big Pushes," at least not in central Pennsylvania. It is just trying to find weak spots along the line. Even when it finds them, its resources do not permit it to continue the aggressive. The region organized and the strike started, the organizers withdraw and leave the section to take care of itself. If the mine workers continue the strike, well and good; if not, the agitation is at an end. The point of attack shifts. There may be other places where resistance is more feeble, where union centers can be established without prolonged agitation or great expense. The union is seeking these.

Recently *Coal Age* noted that the Greensburg section had been left by the union largely to its own devices. The union had its eye on Johnstown—another nonunion section which might take care of its own union affairs if once the sparks of discontent and solidarity were properly lighted. So to Johnstown the organizers went, and Greensburg was largely deserted. Now the scene shifts to Somerset County.

As a result of being left alone, the miners and loaders at Edna Mines Nos. 1 and 2 of the Pittsburgh & Baltimore Coal Co., a subsidiary of the United Coal Corporation, returned to work and are again producing almost a normal output. The Edna No. 1 men ended their strike Wednesday, July 25, and the Edna No. 2 men Friday, July 27. Then, too, the New York & Cleveland Gas Coal Co., a subsidiary of the Pittsburgh Coal Co., went back to work on Tuesday, July 24.

The Westmoreland Coal Co., at Yukon was, however, not quite so well favored. The men went back to work and were getting out a normal output, but on Thursday, July 26, they struck again for union recognition. Three-fourths of the men quit, but they have returned to work again without any concessions being made here or anywhere else.

The men at the Whyel Coke Co.'s plant also struck again on Friday, July 27. Somerset County was temporarily given up by the agitators. It was too hard a nut to crack, so long as there seemed to be other points in the line which were easier to invade. The wonderful results in Alabama, eastern Tennessee and eastern Kentucky make Pennsylvania look of such strategic strength that it does not pay to expend too much power on any section of it. Still a trench raid on Somerset County might be worth while.

As stated, therefore, the activity has now shifted into Somerset County. A number of small mines on the Salisbury branch of the Baltimore & Ohio R.R. were on strike all last week to obtain recognition of the union. The men could not expect more pay, for their wages are higher than in the union fields. Most of them appear to want to work, but they are being influenced by a few—15 or 20—discontented men aided by a few professional organizers, one from Kansas City, Mo. The idle mines, though many, represent a daily output of only between 1200 and 1500 tons, and the companies operating them are as follows: Myersdale Fuel Co. (No. 3 mine), Grassy Run Coal Co. (two mines), Merchants Coal Co. (Elk Lick mine), Baker Mining Co. (No. 1 mine), Harding Coal Co., Tub Mill Coal Co., Boynton Coal Co. and C. K. Bauman & Company.

The men are expected to return soon to such work as is provided for them. It will probably not be steady work, for the car supply was quite inadequate during the past week. The Baltimore & Ohio R.R. threatened to refuse open cars to wagon loaders, but they are still supplying them.

Clash When Agitators Approach Mines

The efforts of the strikers and of the representatives of the mine workers union to reach employees of the mines in western Kentucky are stated to have caused several clashes during the week and to have resulted in a number of arrests and in the assignment of additional troops to the section around Providence, in Webster County.

On Aug. 1, John Howard and George Moore, union pickets, were wounded, Moore in the lungs and Howard in the arm, in a clash with mine guards and nonunion miners near Providence. The injured men were taken to a hospital at Evansville, Ind. They named a white guard and a negro miner as their assailants and declared the attack unprovoked.

Company C, of the First Regiment of the National Guards, arrived from Louisville next morning to assist the Signal Corps, which was already on the ground. Trouble developed on Aug. 3 when there was a bloodless battle between the mine guards, troops and miners at the tipple of the Diamond mine near Providence. Several hundred shots are said to have been exchanged. This brush is reported to have followed an attack on the tipple by strikers, which attack was resisted by the mine guards. The troops went out from Providence in automobiles and restored order, making three arrests. These prisoners were sent to Lexington, Ky., where, it is said, they will be charged with firing on Federal troops. Others are to be arrested.

One of the reasons for strong feeling, is the fact that the striking miners are mostly white men while a large proportion of the men who are at work are negroes. This race antagonism is added to the other difficulties. General Roger D. Williams, commander of the Kentucky National Guard, spent several days in the Providence district and returned to Lexington. He reported on the situation to General Barry, commanding the Central Department, at Chicago. While in the strike district General Williams addressed the strikers, agreeing that in organizing they were within their rights but pointing out, also, that the nonunion men who had declined to strike were at perfect liberty to do so.

Miners Won't Work in Unsafe Mine

There is no reason now for unsafe mines. Poverty is no excuse for running a mine that is a menace to life. But when a company is making a big profit, as all mines are now, unsafe mines are a double iniquity. State and county mine inspectors, after looking over the North mine at Nokomis, Montgomery County, Central Illinois, decided that it had not been properly kept up and ordered that it be made safe. The company announced that it would stop work in all rooms and work double shifts in the entries, making the hoisting of coal merely incidental to the overhauling of the mine. The miners have objected even to this program. State officials of the operators and miners are trying to adjust the situation. If the company is permitted to carry out its plans, the work will be completed by Nov. 1. The man who has for five years been manager of the mine has resigned to become superintendent of a mine in Indiana, and his assistant has been promoted to fill his position.

Compensation Compulsory in Illinois

The compulsory compensation act passed by the last Illinois legislature went into effect July 1. Organized miners and other workers had tried for years to have such a law passed. Illinois is the second coal-mining state and the fourth in the Union to have a compulsory compensation law. Until this law was passed, there was an elective compensation law in the state, but only about one-third of the coal companies elected to place themselves under its provisions. The indemnity for injury and death under the new law is substantially increased. An arrangement has been made for the legal department of the United Mine Workers of Illinois to handle all compensation cases without cost to the miners. President Frank Farrington says the Illinois miners' union is the only labor organization in the world that provides such service for its members.

Alabama Threatened with Strike

The United Mine Workers of Alabama, comprising District No. 20, recently called a convention to meet in Birmingham on July 30. The operators were invited but they failed to appear and they declare they will continue to operate without a contract. The mine workers made the declaration that they would strike on Aug. 20 unless the operators would negotiate with them on or prior to that date.

The union declares that a contract is necessary for harmony. Everyone knows that there is no truth in that pretense. The union was not planned for that end nor conducted with harmonious operation in view. It is true that the union leaders do believe in the keeping of agreements, at least in keeping large parts of them, but strikes are threatened every time an agreement has to be made and during the life of an agreement suspensions are far more numerous than at any plant that does not have a union to cultivate dissension.

The argument that the existence of the union makes for steady work is untrue. The right, even the necessity to combine, has more to commend it. But apparently the public is to be assured that the union is an organization which provides for the peaceful adjustment of difficulties. It does nothing of the kind.

The mine workers make the claim that they have already succeeded in unionizing no less than 17,000 out of a possible 23,000 men. This work was all done in 10 weeks—hence since the United States entered the world war. If they have that number of men the strike may be successfully begun even if fatefully ended.

Wages and Hours Set by Government

The Dominion Government Commissioner has written the following wage scale for District No. 18, which includes all the unionized sections of western Canada:

DAY WAGES AND HOURS OF OUTSIDE MINE WORKERS

Occupation	Rate	Hours	Occupation	Rate	Hours
Bottom man	$3.66	9	Railway-car handler	$3.28	9
Slate pickers (boys)	1.76	9	Tipple dumper (man)	3.66	9
Slate pickers (men)	3.16	9	Tipple dumpers' helpers	3.33	9
Car oilers (men)	3.16	9	Tipple dumper (boy)	2.13	9
Car oilers (boys)	2.13	9	Top eager	3.33	9
Tally boys	1.76	9	Car repairer	4.19	9
Teamsters	3.66	9	Car repairer's helper	3.67	9
Blacksmiths	4.72	9	Breaker engineer	4.19	9
Blacksmiths' helpers	3.67	9	*Lampman	$3.16 to 3.66	8
Carpenters	4.72	9	*Lampman	3.16 to 4.19	11
Carpenters' helpers	3.67	9	Machinists	4.19 to 4.72	9
Power-house engineers	5.35	11	Machinist's helper	3.67	9
Power-house engineers	4.77	9	Ashman	3.16	9
Power-house engineers	4.19	8	Ashman	3.66	11
Fanmen	3.67	11	Wiper (man)	3.66	11
Hoisting engineers	3.97	8	Coupler (man)	3.16	9
Hoisting engineers	4.63	9	Coupler (boy)	2.13	9
Hoisting engineers	5.35	11	Breaker oiler	3.66	10
Incline engineers	4.19	9	Washer or tipple oiler	3.66	10
Tail-rope engineers	4.46	8	Breaker picker boss	3.66	9
Tail-rope engineers	4.72	9	Timber framer	4.19	9
Endless rope engineers	4.08	9	Timber sawyer	3.33	9
Box-car loader engineer	4.19	9	Box-car shoveler	3.66	9
Tipple engineer	4.19	9	Breaker-platform boss	3.66	9
Screen-engine tender	3.34	9	Breaker-platform men	3.28	9
Locomotive engineer	4.19	9	Breaker-screen men	3.16	9
Locomotive switchman	3.78	9	Rock-bank men	3.16	9
Fireman	3.66	8	Dirt-bank men	3.16	9
Fireman	4.16	9	Fan fireman	4.19	11
Fireman	4.72	11	Stablemen	3.16	9
Fireman's helper	3.34	9	Box-car finisher	3.16	9
Water tender	4.02	11	All other labor	3.16	9

* Depending on the number of lamps and the skill of the man.

DAY WAGES AND HOURS OF INSIDE MINE WORKERS

Occupation	Rate	Hours	Occupation	Rate	Hours
Shot lighter	$4.08	8	Buckers	$3.47	8
Bratticeman	4.08	8	Loaders	3.47	8
Bratticeman's helper	3.47	8	Miners	4.08	8
Timberman	4.08	8	Miners (wet places)	4.60	8
Timberman's helper	3.47	8	Miner's laborers (wet places)	3.88	8
Tracklayers	4.08	8	Rock miners	4.60	8
Tracklayer's helper	3.47	8	Timber handlers	3.79	8
Motorman	3.79	8	Cagers, slope and incline	3.47	8
Motorman's helper	3.47	8	Cagers, shaft	4.08	8
Locomotive engineer	3.79	8	Machinemen	4.60	8
Locomotive switchman	3.47	8	Machineman's helper	4.08	8
Drivers	3.79	8	Pumpmen	3.47	8
Drivers (wet places)	4.08	8	Hoistmen	$3.79 to 4.08	8
Drivers (spike team)	4.31	8	Drivers (boys)	2.13 to 3.47	8
Couplers (men)	3.47	8	Grippers (boys)	2.13 to 3.47	8
Couplers (boys)	2.13	8	Pipe fitters' helpers	3.47	8
Switch boys	$1.76 to 2.13	8	Pick carriers	1.76 to 3.47	8
Door boys	1.42	8	Clutchmen	4.08	8
Fan boys	$1.42 to 2.13		Rollermen	3.47	8
Rope riders	3.79	8	Grippers	3.47	8
Main and tail-rope riders	4.08	8	All other labor	3.47	8
Pushers	3.47	8			

WAGES AND HOURS OF MEN AT BEEHIVE COKE OVENS

Occupation	Rate	Occupation	Per Day	Hours
Leveling and drawing, 6½ ton charge, per oven	$1.24	Steam-locomotive engineer	$4.19	9
Leveling and drawing, 5 ton charge, per oven	.99	Motorman	3.93	9
Loading box or open cars (under 200 tons per month) per ton	.21½	Larryman	3.16	9
Loading box or open cars (over 200 tons per month), per ton	.19	Plasterers	3.16	9
		Carters and cleaners	3.16	9
		All other labor	3.16	9

Tonnage and Yardage Rates Paid to Miners

The mining rates of the Coal Creek colliery of the Crow's Nest Pass Coal Co., Ltd., are given as samples of the wages paid mine workers in that region:

Old and New No. 1 Mine and No. 1 Mine East—Mining rate: 67c. per gross ton. Yardage: Levels and parallels, $1.21 per lin.yd.; crosscuts between levels, $1.21 per lin.yd.; room crosscuts, no tracks, 60c. per lineal yard.

No. 1 Mine North, Upper Bench—Mining rate: 73c. per gross ton. Yardage: Levels and parallels, $1.82 per lin.yd.; crosscuts between levels, $1.82 per lin.yd.; room crosscuts, no tracks, 60c. per lineal yard.

No. 1 Mine South and No. 1 Mine North, Lower Bench—Mining rate: 67c. per gross ton. Longwall system in No. 1 South: 67c. per gross ton. Yardage: Levels and parallels, $1.21 per lin.yd.; crosscuts between levels, $1.21 per lin.yd.; room crosscuts, no tracks, 60c. per lineal yard.

Provided that the above mining rate shall include the mining out and and casting back slate bands.

No. 2 Mine and No. 5 Mine—Mining rate: 73c. per gross ton. Longwall system in No. 2 Mine: 63c. per gross ton. Yardage: Levels and parallels, $1.82 per lin.yd.; crosscuts between levels, $1.82 per lin.yd.; room crosscuts, no tracks, 60c. per lineal yard.

No. 3 Mine, No. 3 Slope and All Workings on the North Side of Slope—Mining rate: Pillar-and-stall system, 73c. per gross ton. Longwall system: 73c. per gross ton. Yardage: Levels and parallels, $2.42 per lin.yd.; crosscuts between levels, $2.42 per lin.yd.; room crosscuts, no tracks, 60c. per lineal yard.

In longwall work the company guarantees to keep the brushing up to within 4 ft. 6 in. of the face, and when the company fails to do so and the miner is put to any inconvenience thereby, he shall have the privilege of brushing his own place "on company work," the company to find the necessary tools.

If at any time the conditions become such that the miner can lift 6 or 8 in. of bottom with the pick without seriously affecting his work as a coal producer, he shall be given the privilege of doing so when required by the company.

No. 9 Mine—Mining rate: Pillar-and-stall system, 75c. per gross ton; longwall system, 63c. per gross ton. Yardage: Levels and parallels, $1.82 per lin.yd.; crosscuts between levels, $1.82 per lin.yd.; room crosscuts, no tracks, 60c. per lin.yd. Clod: When the company requires the miner to take down the clod overlying the coal, it shall pay him for doing the same, including stowing, ½c. per in. in thickness, per foot in width, per lineal yard; measurement to be taken weekly in the middle of the working place. Brushing: Bottom brushing to be done by the company.

"B" Mine—Mining rate: 70c. per gross ton. Yardage: Levels and parallels (10 ft. in width and under), $1.28 per lin.yd.; levels and parallels (over 10 ft. and to 12 ft. in width), $1.21 per lin.yd.; crosscuts (between levels and parallels), $1.21 per lin.yd.; crosscuts (between rooms), no tracks, 60c. per lineal yard.

The above mining rate also applies should the bottom bench coal be loaded on the tonnage basis.

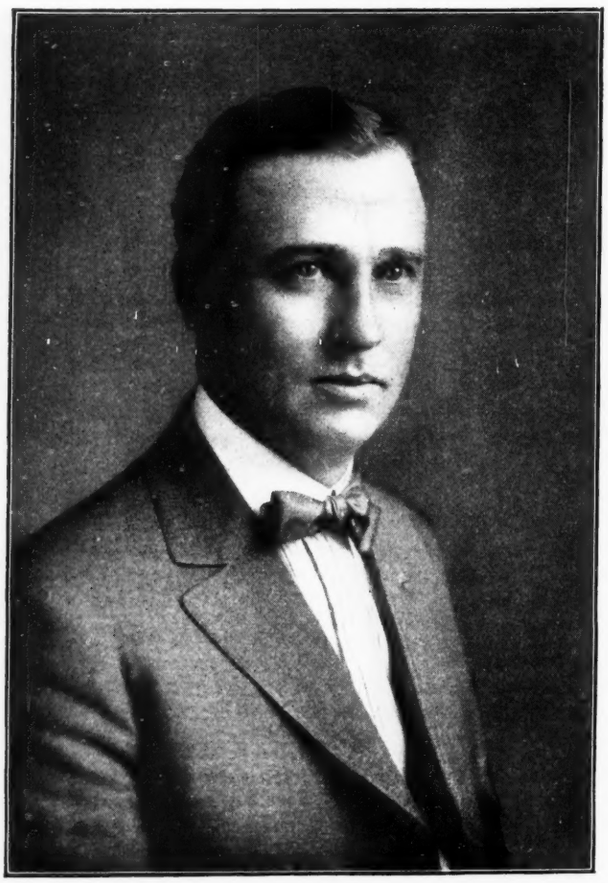
All Seams—System of working: Whenever any new system is inaugurated or radical change in the present system is made in any mine where there is a contract price fixed thereon, the company or the employees may ask for a price to be fixed on the work as "new work"; as, for example, a change from "longwall" to "pillar-and-stall," or vice versa, shall be considered "new work." Pillar extraction: When pillars are extracted, the price shall be 6c. per gross ton less, in all seams, than is paid for solid-coal mining. Dips, raise places and slants: Main-haulage roads, other than crosscuts between rooms, to be paid for at yardage rates equal to those paid for levels and parallels.

Who's Who In Coal Mining

Robert M. Magraw

West Virginia and Pennsylvania, our two biggest coal states, have furnished the mining business of the West some of its most progressive and most efficient men. Among others who have gone out to grow up with the country is Robert Magraw, general superintendent, United States Fuel Co., at Hiawatha, Utah.

Mr. Magraw was born in 1879 on a farm in Harper County, Md., about 35 miles from Baltimore. His early education was obtained in a public school, and later in the high school at Havre de Grace, Md. His first work was undertaken at Douglas, W. Va., in 1897, where he was



ROBERT M. MAGRAW.
General superintendent, United States Fuel Co., Hiawatha, Utah

employed as a shipping clerk for the Cumberland Coal Co. on the West Virginia Central R.R. After serving in this position for two years, Mr. Magraw moved over to Austen, W. Va., a town on the Baltimore & Ohio R.R., where he obtained employment as a miner, later as a machine runner.

In 1902 he went to Fairmont and became connected with S. D. Brady's engineering corps, where he obtained his first experience in underground surveying. Two years later he moved to Hiorra as mine superintendent, and in 1905 he decided to go West, making his first stop in Montana, where, at a place called Electric, he became connected with the Montana Coal and Coke Co. as mine superintendent. After serving five years with that concern, he severed his connection to accept a position as superintendent with the Utah Fuel Co., at Somerset, Colo., which job held his attention for four years. In 1914 the Utah Fuel Co. shifted him from Somerset, Colo., to Castlegate, Utah, where he served the same concern as mine superintendent.

In 1915 Mr. Magraw first became connected with the United States Fuel Co., in whose employ he still remains. This company operates four mines at Mohrland, Black Hawk and Hiawatha, about 25 miles south of Castlegate. It also operates a mine just below Castlegate. The company produces about 4000 tons daily and mines one of the best seams of coal opened anywhere in the West. This bed averages from 18 to 22 ft. in thickness and is a clean bituminous of first quality.

In mining this coal Mr. Magraw has experimented with various machines. At present he is using Jeffrey and Sullivan shortwall cutters and a Goodman straight-face. All of the mines are developed on the room-and-pillar system, have exhaust ventilation, electric haulage and gathering locomotives; General Electric and Goodman motors are used. Nearly all of the United States Fuel Co.'s coal is consumed in the Rocky Mountain country, and what is left over from this near-by market is shipped to California.

Mr. Magraw was married in 1914 and has two daughters. His long sojourn in the West has made him typical of the country. He is frank and aboveboard and has established a reputation for himself in all his dealings, which is an asset of greatest value. The coal industry has few examples that hold forth greater hope for a young man starting as a miner than does the life of Bob Magraw. Beginning at the bottom as he did, he does not lack in understanding the problems that confront the fellows who are sweating for their daily bread. Perhaps it's his early experiences, or maybe it's his big human heart, but anyway, whatever it is, "Bob" is a regular fellow and is one of the best-liked and most-trusted individuals in the Western coal industry.

Rising Value of Anthracite Lands

In tax-appeal cases it has been shown that the prices of anthracite lands vary from $200 and $300 per acre to $10,000, the smaller values being for lands containing relatively thin coal or coal that was practically exhausted. The medium values of from $2000 to $3000 per acre were paid for relatively small areas with normal coal contents but unopened and generally not of sufficient area for separate operations. The extreme values were for going concerns or for lands so located strategically that they had a special value for the persons who purchased them.—R. V. Norris, International Engineering Congress, San Francisco, California.

"Coal Age" Index

Indexes to *Coal Age* are furnished free to all who ask for them. The index for the first half of 1917 can now be obtained by addressing a request for one to the Subscription Department, *Coal Age*, New York City.

Editorials

Coal Manufacture

EVERY once in a while some new form of get-rich-quick scheme comes to light. Companies are being organized to develop or exploit some new "discovery" or invention the successful marketing of which is certain to net vast returns for those who have sufficient foresight to realize and grasp the "stupendous opportunities" and get in on the ground floor. Of course these "opportunities" take all varieties of shapes and in one form or another cover pretty nearly the entire field of human existence.

Years ago gold bricks, gold, silver and copper mines were the favorite fields of the promoter. The glitter of the metal to be won found its way into the prospectuses of the boosters. The lure of wealth attracted myriads of the unwary, and not a few took up the chase of the elusive *ignis fatuus* of the precious-metal mine.

Gradually the public "got wise," and the promoter was compelled to seek new and more verdant pastures. From gold bricks and gold mines he turned to other forms of "green goods," which ranged all the way from irrigation of the Great American Desert to the manufacture of hair pins and patented machine attachments. And still the suckers bit.

Varied, ingenious and sometimes amusing are the reasons advanced for forsaking the ordinary and entirely legitimate methods of financing industrial enterprises and allowing "the man of moderate or small means to reap the full fruits of his intelligence and foresight." Not infrequently the "discoverer of this amazing process, himself a poor man, is determined that the honest laborers of the land shall have equal chances with the captains of finance," etc., etc. The appeal is not to the banker, not to those skilled in financial enterprises but to those *unskilled* in financial enterprises. And while the glitter of gold is unmistakable and the road to the foot of the rainbow is clearly pointed out, there is always somewhere some detail that is indistinct, shrouded and befogged in language strongly convincing but exquisitely vague.

In the recent past, that is, ever since high prices have been paid for coal, the "green goods" man has pitched his tent in the field of fuel. A few months ago one of the Chicago dailies printed a full-page advertisement of a "Coal Carbureter," which set forth at great length the wonderful advantages of the "discovery" that powdered coal could be mixed with air in proper proportions and made to burn fiercely in suspension. Scientists and engineers who witnessed demonstrations of this device were "amazed," etc., etc. In the light of the scientific knowledge possessed by the ordinary workaday mortal, such statements doubtless savor of the wonderful. In view of the fact, however, that it has been a matter of common knowledge for decades that powdered coal mingled with air in proper proportions would burn in a suitable furnace in a manner closely analogous to that of gas or oil and that hundreds of powdered coal mixers and burners are in daily use both in this country and abroad the "amazing" thing is that such statements as were made would ever be attempted.

The latest "bonanza" that has come to the attention of *Coal Age* in the fuel line is a prospectus extolling "coal manufacture." Like many other documents of a similar nature, this one is in many instances anything but explicit. Reduced to its lowest terms, the scheme is simply a briquetting proposition. It is proposed to haul anthracite silt to the center of an Eastern market and there make a peculiar shaped briquet with a secret binder, the composition of which defies analysis by the most skillful chemists equipped "with every facility known to the science of chemistry." This binder must indeed be a wonder, for it is claimed that the "manufactured coal" as compared with ordinary domestic anthracite (from the degradation of which it is made) "makes a more intense heat; lasts longer in the fire; one ton lasts as long as two tons of chestnut coal doing the same service." The claim is also at least implied that the manufactured article contains no sulphur and that it produces "25 to 50 per cent. less ash" than domestic anthracite.

While this prospectus endeavors to point the way to vast, almost fabulous, wealth by the sure and rapid road of investment in the —— Coal Manufacturing Co., and to make the investor's path so plain that "a wayfaring man though a fool need not err therein," actual facts and figures as to costs of raw material and of manufacture are conspicuous by their complete absence. One stern hard fact should be borne in mind by those into whose hands this prospectus or any other "literature" extolling a similar scheme may fall. Briquetting of fuel has been attempted many times in this country for many years past, and while some plants are at last in successful commercial operation, no individual or corporation has yet attained any great wealth by this means—some have suffered financial ruin.

Coal a Late and Lesser Profiteer

AMERICAN coal was slow in becoming a profiteer. It bemoaned the war as a terrible affliction for nearly two years. For some months, it found in the war an unequaled condition of stagnation. When cotton planters cried "Buy a bale," the coal operators were equally troubled to make a living. Cotton and bituminous coal were then both selling well below their cost.

But bituminous coal eventually boomed so that even contract prices looked good, and it may be interesting to quote the figures given by *The Annalist*, in "The Upward Flight of Prices" published in a recent issue. The first five columns of figures are taken directly from *The Annalist*. The increased prices begin to show in the third, fourth and fifth columns. The figures in these columns have therefore been averaged in the sixth column, head *A*, and compared with the figures for July 1, 1914, in the seventh column, headed *B*.

	July 1, '14	July 1, '15	July 1, '16	Jan. 1, '17	July 1, '17	A	B
Iron ore:							
Old Range Bessemer	3.75	3.75	4.45	5.95	5.95	5.45	1.45
Old Range non-Bessemer	3.00	3.00	3.70	5.20	5.20	4.70	1.57
Mesaba Bessemer	3.50	3.45	4.20	5.70	5.70	5.20	1.49
Mesaba non-Bessemer	2.85	2.80	3.55	5.05	5.05	4.55	1.60
Coal	1.15	1.05	1.23	1.23	4.00	2.15	1.87
Coke	2.30	2.25	3.30	9.50	13.00	8.60	3.74
Pig iron (composite)	13.52	13.125	18.585	30.00	50.00	32.86	2.43
Ingot iron	2.50	2.45	3.60	5.20	8.70	5.83	2.33
Slabs	20.00	22.00	42.00	60.00	105.00	69.00	3.45
Billets, openhearth	19.50	22.40	44.50	60.00	100.00	68.17	3.50
Sheets	1.80	1.75	2.90	4.50	8.00	5.13	2.85
Bars	1.15	1.25	2.50	3.00	4.50	3.33	2.90
Bands	1.15	1.25	2.50	3.25	5.25	3.66	3.18
Hoops	1.25	1.30	2.75	3.25	5.25	3.75	3.00
Flat wire	2.50	2.50	6.50	7.00	9.00	7.50	3.00
Wire rods	24.50	25.00	50.00	70.00	95.00	71.66	2.92
Wire	1.30	1.35	2.45	2.95	3.95	3.12	2.40

Iron ore—Free on board Lake Erie dock. Coke—Free on board furnace. Coal—Free on board mines, contract prices. Pig iron—Free on board Valley. Ingot iron—Free on board Youngstown. Balance—Free on board Pittsburgh.

A is the average of the prices for July 1, 1916, Jan. 1, 1917, and July 1, 1917. B is the ratio of the average prices A to the price on July 1, 1914.

From the table it is evident that bituminous coal operators have prospered more than iron-ore producers, but that the making of coke and the manufacturing of iron have been much more profitable than either. Where contract bituminous coal has been boosted on an average 87 per cent., coke has profited 274 per cent., openhearth billets, 250 per cent.; slabs, 245 per cent.; bands, 218 per cent.; hoops and flat wire, 200 per cent. and other products in somewhat smaller percentages.

As the flight of coal has been restrained, as coal has even volplaned to a level lower than the figure quoted for July 1, 1917, there is no reason to believe that coal is a leader among the profiteers.

One cannot but be of two opposing minds about profits. If Germany had not allowed her captains of industry so large a profit in peace, we would not have found her so formidable in war. Financial strength comes from profits, and patriotism requires that we have financial strength. Nevertheless, it is foolish not to recognize that the building of large fortunes is a danger to democratic government unless the mass of the people are saving and making profits concurrently.

Two-Way Kickers

PROBABLY every coal man is familiar with the fable of the frogs who besought Jupiter for a king. They were highly dissatisfied with the log that he gave them and again clamored for a ruler, a real king, whom they must fear and respect. Jupiter at length, thoroughly disgusted with their abominable din, sent them a crane, which soon devoured several of the chronic croakers.

A few months ago the belief was prevalent throughout the land that the coal producers were a set of infernal robbers; that they had boosted the price of coal to a figure far above the cost of production and were making money at such a terrific rate of speed as to make a purchaser of "war brides" green with envy.

And quite naturally, perhaps, since New England is somewhat remote from the coal fields and since manufacturing is the chief industry and consumes annually large quantities of fuel, the wail that went up from that region waxed loud and long, and New England's denunciation of the nefarious "coal barons" knew no limit except that imposed by the limitations of the English lexicon. The lamentations and imprecations and supplications reached even to the National Capitol.

Then came the price-fixing conference, and the industry settled down firm in the belief that it had conferred a great benefit upon the public and itself as well; that conditions had at last been stabilized and the confidence of the public at least partly gained.

It will be noticed from our Washington letter, however (see page 244), that the maximum prices as agreed upon at the Capitol are not satisfactory to the manufacturers "down east." They perceive or think they perceive that a uniform price and equal distribution to all will by no means inure to the advantage of New England. If a certain price is firmly established and rigidly adhered to, how can any consuming community successfully bid against a competitor and secure preferment over it in the matter of daily supply and stocks for the future?

Consequently the Committee on Coal Production is in daily receipt of letters from New England requesting that the price agreement be abrogated and set aside in order that certain manufacturing interests busily engaged on paying contracts by paying more may secure preferment in the shipment of fuel.

Is it just barely possible that even New England may some day realize that what sent coal prices skyrocketing last year was not the nefarious activities of "robber coal barons," but over-zealousness on the part of consumers to secure their full share (or perhaps a trifle more) in a supply that was and now is at best scant?

Low Ebb in Their Latinity

THE Illinois State Council of Defense quotes *Salus populi suprema lex* and appears to translate it: The safety of the public requires that the manufacturers get low-priced coal that they may sell high-priced goods. This seems a new version of a time-honored maxim, but in these days, when patriotism is at low ebb, we cannot expect wise and constructive treatment for our basic industries.

Those who would bring the coal industry down to a 5 per cent. industry in war and a "catch-as-catch-can" industry in peace have the upper hand. Congress, the President and the public generally say to their best friends and servants: "You serve us so well and we need your services so much that we will pay you badly."

The Illinois Council of Defense wants the governor to seize the mines and urges the governors of other states to do the same. The mine operators might well meet and clamor for the Government to seize the factories from which they, the operators, obtain their essential and high-priced supplies.

Discussion by Readers

Bossing and Being Bossed

Letter No. 1—I was greatly interested in reading the Foreword entitled "Your Boss," in the last issue of *Coal Age*. The article is well written, and its suggestions are timely. Some people have but one way of doing a thing and are hard to convince that their way is not the best way. They seldom consider that the boss is better qualified to decide that question, in respect to its application to the work in his charge, than they are themselves.

Permit me to suggest, here, that a safe motto for the worker to adopt is, "Please the boss." It is not too much to say that this motto is the secret of many a man's success. The boss looks at a man's work as a single item in a series of operations necessary to produce results.

The worker, on the other hand, views the situation from a single angle. His plan or way of performing his work may appeal to him as the better way, but he does not realize that it does not fit into the general plan and would necessitate changes in other sections of the mine that would more than offset the advantage claimed, and the boss turns down the proposition for that reason.

Talking Over New Ideas with the Boss

The right kind of a boss is always on the lookout for new ways of doing things, but his judgment is based on the fitness of any proposed plan or method to the general scheme of operations in his charge. When a new way suggests itself to a worker, it is always right to talk it over with the boss if he is the right kind of a man. It shows that you have your eyes open and your wits are alive to find the best way of doing the work. But when your plan is not accepted, be sure there is a reason. Don't continue to argue the matter from your own standpoint. Your persistence will only annoy a good boss and accomplish nothing. Drop your hobby and do the work the way you are told.

Every efficient workman knows that he is paid for doing things the way the boss wants them done. If he follows orders, he is not to blame for the results. A good worker should never be afraid to inject a little gray matter into his work. He should keep thinking and scheming to devise new ways and methods; but it is important to remember that thinking one's own way is the best way does not make it so. Talk it over with the boss in a frank way, and he will appreciate your desire to assist the work and it will put you in line for promotion.

Recent conversations I have had with employers show that they are giving bonuses for advanced ideas that will expedite the work. The test of the whole matter lies in being able to "deliver the goods"; that is what the boss wants and must have. Whatever plans you may have, or whatever you may think of the method or system in use, obey your orders, remembering that it is obedience to instructions that is the surest road to promotion.

George Stockdale.

Mt. Braddock, Penn.

Importation of Chinese Miners

Letter No. 1—I read with interest the Foreword of July 21, entitled "Men! Men! Men!" *Coal Age* editor's analyzation of the facts is unquestionably correct. The suggestion of bringing Chinese into this country as being good miners is very apropos to the present crisis. Every person possessed of the proper knowledge knows that the Chinese are the most honest of all nationalities, with one exception. That exception is the Norwegian people, who have for centuries been accustomed to discipline, a feature that we woefully lack here in America.

The statistical result of the Chinese labor needs no further commendation. Their alertness to learn has been unquestioned for centuries. Much would I prefer them to the class of importations we have been having for a number of years past. All the anarchy we have seen and have yet to see must be laid at the doors of such importations as have been brought about by conditions in the last ten years, and where the end will be no one can tell.

The idea of destruction of property, common to our foreign labor, immediately when they do not get what they demand is becoming bolder daily, and the sooner the producing interests of this country realize that a change is necessary the better it will be; because we are unable to get the old class of English, Irish, Welsh and Scotch miners whom we formerly had. France is truly wise in the importation of the Chinese for her coal mines. I hope to see, at an early date, the same result in this country.

J. L. Good,

Cleveland, Ohio. The National Coal Co.

Letter No. 2—I read with much interest the Foreword in the issue of *Coal Age*, July 21, and want to say that I think you are right about importing Chinese. I have seen them worked in the West, and they make admirable miners.

It is difficult to imagine, however, in an Administration so favorable to labor, how it will be possible to succeed in repealing the anti-Chinese immigration law, although I am heartily in favor of a trial being made in order to allow the Chinese to come to this country.

G. M. Shoemaker,

Cincinnati, Ohio. The Red Dragon Coal Co.

Letter No. 3—Referring to the question of importing labor from China, to be used in our coal mines, suggested in a recent Foreword, in *Coal Age*, and referred to in the article of P. L. Mathews, Aug. 4, p. 195, permit me to say emphatically, No! I am firmly convinced

that this type of labor should be entirely excluded from this country and not employed for any purpose whatsoever.

Industrial conditions are bad enough now, without introducing an element that would tend to degrade our own laboring classes by compelling them to compete with such a class of workers as would be brought from China. Truly, the conditions would then be practically unbearable for the common people dependent on their daily toil.

It has been assumed that there is at the present time a shortage of coal miners in this country. In my opinion this assumption is not based on actual facts. Admitting that the supply of coal is short of the demand, I attribute this shortage to the inefficiency of the railroad service, as well as to certain inefficient methods in the coal industry itself. It is a fact that shipments of coal have been largely held up by reason of an insufficiency of cars. I believe it is safe to say that the railroads have not furnished to exceed an average of 60 per cent. of the required car supply.

In addition to these difficulties, the labor now employed in the mines will average hardly 60 per cent. of its customary efficiency, owing to strikes, holidays and failure of miners to report for work immediately following payday at the mines. It is obvious to my mind that there would be no need of importing labor if these points were corrected.

It is my belief that the only absolute remedy for present conditions is to be found in Government control of our coal mines, at least during the continuance of the war, and even then there would undoubtedly still remain difficulties to be overcome. In view of the fact that so large a proportion of those controlling industrial interests, in this country, have seemingly lost their patriotism, it will soon be up to the common people to demand their rights.

WILLIAM E. RICHARDS, Mine Supt.,
Lilly, Penn. Lilly Coal Co.

Letter No. 4—Referring to the suggestion of importing Chinese miners in the present crisis, made in the Foreword of July 21, let me say, the proposition is timely but calls for clear and unbiased consideration. At least one point will require to be carefully studied from a social as well as from an economical standpoint.

We must not, at this time, allow ourselves to assume the position of the opportunist and declare that "all is fair in love and war," with particular reference to the present war condition. Several years ago or, to be more definite, following the British Boer War, Chinamen were imported into Africa to take the place of white men, and the records of the British Royal Commission show that this class of labor was extremely undesirable and eventually discarded.

The Foreword to which I have referred, in speaking of the importation of Chinese into France, states: "France is wise. Why can't we follow suit?" My suggestion is, since you advise "following suit," let us follow the suit of the British government and leave Mr. Chinaman where he belongs—in China.

There is no question but that the present crisis requires careful study. Much is to be gained by the adoption of improved methods, which will often produce phenomenal results. For example, let me suggest for one thing the concentration of the working forces into a smaller territory in the mine. In my own experience the adoption of that simple method resulted at once in the production of 15 per cent. more coal. The increase was due to two causes, however. In the first place, a closer supervision by mine officials was made possible through the concentration of the working force, and second, the underground haulage was simplified, requiring less rolling stock and a smaller expenditure for power and repairs. WILLIAM CROOKS.

Johns, Ala.

Electric vs. Oil Safety Lamps

Letter No. 5—For a number of years I have used only the Davy and Wolf safety lamps, in making my examination of the mine, in the early hours of the morning. The Wolf lamp is our standard lamp. It serves well for testing for gas and other general purposes.

I was interested in reading the letter of Robert A. Marshall, *Coal Age*, July 7, p. 24, and agree with him when he suggests that mine foremen, firebosses, mine examiners and shotfirers should all carry electric lamps in their caps, so as to enable them to make a more thorough inspection of the places they examine. Although my experience with the electric cap lamp is limited, I feel confident that a person can do more and better work with such a light than with an oil safety lamp, which I believe will soon be a thing of the past as far as the daily work of the miner is concerned.

DAYDREAMS AND EXPERIENCES

Some few years ago, when the Wico lamp first made its appearance in the mine, the belief was forcibly impressed on my mind that every miner should be equipped with such a lamp. I was greatly disappointed, on writing to the Wico Company, to find that I could not purchase a single lamp. What I have seen of the lamp and the bright light that it gave caused me to have daydreams in which I fancied that, with such a light, no dangerous condition of the roof or coal would escape notice and no small obstruction on the roadway would be passed unobserved. In my fancy it seemed that the great strain on my eyes, due to constantly striving to make out objects in the dark, was greatly relieved.

Some months ago, before the ex-chief mine inspector of Ohio resigned his office, he made a ruling that all coal companies employing firebosses should furnish them with electric lamps that they could carry with them when making the examination of the mine. I regret to say that in several mines in this district this ruling has not been complied with. A few companies have furnished the firebosses with flashlights, while others continue to provide them with nothing but the gauze safety lamp.

While working some time ago in the pitching seams of the Springhill mines, in Nova Scotia, nothing but gauze safety lamps were used, and it was a frequent occurrence for a man to lose his light. If he could not borrow a lamp from someone who had finished his day's work, he would have to be content with the dim light afforded by his buddy's lamp. This was a great annoyance and decreased the man's efficiency, besides proving a loss to the company by reducing the output of coal.

In closing, I want to say that the only time when it would seem best to use the gauze safety lamp is when

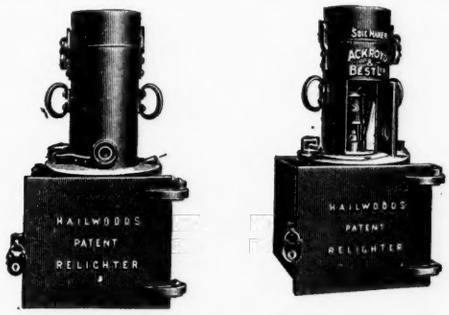
making inspections of the mine and testing for gas. Where no gas is present, the carbide light is a great improvement over the oil safety lamp, but the former cannot be used where the mine is generating gas. Certainly, those who have enjoyed the benefit of these brighter lights would not care to go back to the dim light of the oil lamp any more than they would prefer furnace ventilation to that produced by a fan. They will not fail to remember how the smoke of the lamps and the powder hung at the coal face all day.

Poston, Ohio. FIREBOSS.

Relighting Safety Lamps in the Mine

Letter No. 1—Kindly permit me to refer to the letter of "Cymro," entitled "Electric vs. Oil Safety Lamps," *Coal Age*, July 14, p. 70, in which he describes the relighting device of Ackroyd & Best as being unsafe for use in the return airway of a mine.

Let me say that this suggestion is wholly in error and, to explain, I will refer to the accompanying figure, which shows the general arrangement of the relighting device. In the figure the machine is shown as being open on the right and closed on the left. A safety lamp is shown in position in the machine on the right.



SHOWING THE RELIGHTER CLOSED AND OPEN

First of all, a lamp cannot be lighted in this machine until it is practically surrounded by two iron cylinders. The inner cylinder is fixed and the outer one revolves. In order to light a lamp, it is necessary to place it within the inner cylinder and revolve the outer one, whereby an electric contact is produced.

On reaching the point where the contact is made, there is a gap of 8 in. long by $\frac{1}{32}$ in. wide on each side of the lamp doorway, between the two cylinders. This construction is based on the principle that if the sudden flame of an explosion will not pass through a Davy gauze, which has a 28-in. mesh, it cannot traverse a passage 8 in. long by $\frac{1}{32}$ in. wide.

In the actual test of the machine made by the Federal Bureau of Mines at its laboratory, this theory proved correct. In that test the machine was fitted with sparking plugs and placed in a chamber charged with an explosive mixture of air and gas. The chambers of the machine were also filled with the same explosive mixture. The explosion of the gas within the machine, which was accomplished by means of the sparking plugs, failed to ignite the gas outside of the machine.

In the several tests that were made, not a single ignition of the gas outside of the machine occurred. Tests were also made, in a similar way, with mixtures of explosive gas and coal dust. While the mixture within the machine was always exploded, not in a single instance did the flame communicate with the gas surrounding the machine.

I am fully aware that the coal-mining laws of Great Britain do not allow lamps to be relit on the return airway of a mine, but I thought it only right to give the readers of *Coal Age* the benefit of information that will enable them to realize that the machine can be used with perfect safety on the return airway of a gassy mine.

When relighting a lamp in an airway charged with explosive gas, or gas and dust, the mixture will, of course, be exploded within the chambers of the machine, but that explosion will not be communicated to the gas-charged air in the airway. The products of the combustion of the gas, or gas and dust, within the machine will even choke out the flame within the chamber and thus make it impossible to relight a lamp in such a mixture. J. WINN.

Pittsburgh, Penn.

Practices in Blasting Coal

Letter No. 7—It has been so often suggested that companies should employ special shotfirers to fire the shots drilled and charged by the men, after every man has left the mine, that I am led to ask, Why employ these special men to fire the shots that the miners have prepared?

Of course there is only one reason for this, and that is a humanitarian one, having for its purpose the risking of fewer lives at the time of firing the shots. Should a blownout shot occur and an explosion of gas or dust follow, the only ones endangered would be the shotfirers themselves. The practice is quite different from that common here in the anthracite field.

Notwithstanding the fact that we have some of the most gaseous mines in the world, the miners are permitted to charge and fire their own shots when they please. Such is the difference in the conditions existing in anthracite mines with respect to the fineness and inflammability of the dust produced in the mining of the coal, that the practice of shooting the coal in these mines is not to be compared with that in the soft-coal fields.

Some years ago I had a little experience in the mining of soft coal in one of the Southern States. Having been used to working in chambers where the air was carried right up to the coal face, it was some surprise to me to observe the little attention paid to the ventilation of the working places in that region.

The mine in which I was employed was a large mine, putting out at least 2000 tons of coal a day. It may seem almost unbelievable, but I observed breasts driven 300 ft. without a crosscut. The practice there was to drive from butt heading to butt heading in this manner. When the breast was finally finished and holed through to the next butt, the miner would fall back 100 ft. and drive a crosscut to the next breast. Then he would fall back another hundred feet and do the same thing.

Someone may ask how it would be possible for men to work in a place that far ahead of the air; but that is

a question I cannot answer. The miners did not seem to worry themselves much about the air. The fact of the matter was that there were about a hundred places idle in different parts of the mine, and when a man thought the air in his place was a little bad he would take his tools and powder to another place, where the air might be a little better.

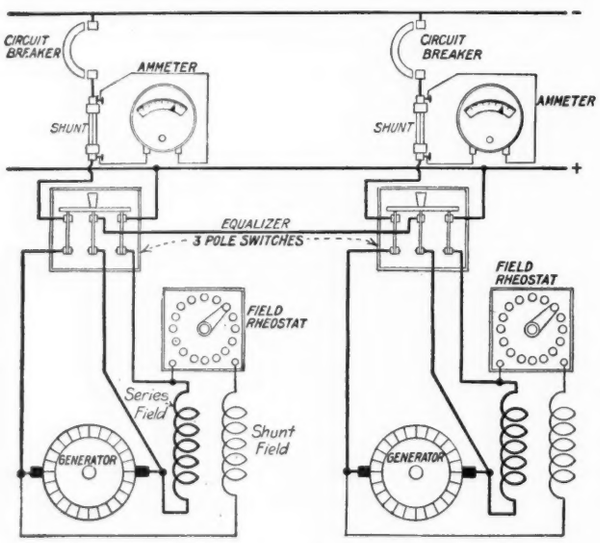
What struck me most forcibly was the great loss in the efficient operation of the mine, under such conditions. Not only did the miners lose time going from place to place, which greatly reduced their earning capacity, but there was a decided loss to the company in the reduced output of coal, while the overhead charges remained unchanged. It would seem that the management would have recognized the fact that greater efficiency could be secured through a more concentrated plan of working and by maintaining better discipline in the mine. The anthracite law makes it necessary, here, to supply a separate air current to each 75 men at work in their places. W. A. BARRETT.

Nanticoke, Penn.

Electric-Power Distribution

Letter No. 1—Kindly permit me to offer a few suggestions in reference to the inquiry of "Mine Electrician," *Coal Age*, June 23, p. 1092.

It is unfortunate that this correspondent has not given more of the details necessary to form an intelligent opinion based on an accurate knowledge of the conditions under which these two generators are operating.



PROPOSED ARRANGEMENT TO EQUALIZE LOADS

The horsepower, or kilowatt of each machine should have been stated; and it is important to know, further, whether the generators are shunt- or compound-wound or of the type known as "commutating-pole generators."

If the two machines are of equal capacity, they can be readily operated in parallel, and this would greatly improve the present conditions. If they are of different compounding ratios, however, it will be necessary to readjust the fields of the two machines, in order to obtain uniform conditions.

The operation of a shunt- and a compound-wound generator in parallel will not prove successful, for the reason that the compound machine will then take more than its share of the load. Assuming, however, that the two generators are each compound-wound, I would suggest the connection shown in the accompanying figure, which will greatly improve the present conditions, by establishing a parallel operation. In this arrangement the two machines will divide the load equally, and the two ammeters shown in the figure will each read 850 amp., since the machines are together generating a current of 600 + 1100 = 1700 amperes.

As has already been indicated, in the reply to this inquiry, the present condition presents a very unequal distribution of the power generated; and this, in my opinion, is the real source of the trouble. I concur in the statement that "there is no harm in the machines using a common return wire, provided that wire is large enough to carry the current."

Allow me to suggest, however, that if it is desired that each of these machines shall carry an equal load, it will be necessary to extend the feeder lines so that one-half of the total load of the 19 machines operated will be borne by each of the generators. It is plainly impossible to secure a satisfactory operation of two generators when one of them is given a load of 16 machines, using nearly 1100 ÷ 16 = 69 amp. in each machine, while the other generator is supplying a current of 600 amp. to three machines, each of which is using 600 ÷ 3 = 200 amp. Such an arrangement is anything but efficient, and unsatisfactory results must be expected.

Windber, Penn. T. O. HUGHES, Electrician.

Uncertificated Mine Foremen

Letter No. 4—It seems to me that W. H. Noone, in his letter, *Coal Age*, July 7, p. 26, has fully answered the question rased by "Kentucky," June 2, p. 970, as to what extent life and property should be endangered by the employment of uncertified mine foremen, should the need arise by reason of the war. This question, however, must be regarded from the standpoint of patriotism, and with due regard to securing the highest degree of safety in the mine. Having this idea in mind, permit me to add a few additional thoughts.

The mere fact of a miner possessing a certificate of competency is no guarantee that he is a careful and safe man and will make a successful mine foreman. The certificate does not prove him to be resourceful in case of danger, which is an element gained only by long practical experience, though an important qualification of a good foreman.

A certificate of competency granted a candidate by an examining board merely indicates that he has passed the required test and is authorized to act as mine foreman. Upon receiving his certificate the man is no more capable than he was before the examination; but he has the authorization of the State Board of Examiners. It must be admitted that there are many good miners working at the face, today, who possess the same practical capability, but lack the authorization that would permit them to hold the position of mine foreman.

While admitting that a theoretical knowledge of mining combined with practical experience, is an important quality, which is what a mine foreman should possess, the question may be asked, Does it make its

possessor a safer man to place in charge of a mine? It may make him a more successful foreman, if he is able to apply his theoretical knowledge so as to increase his efficiency. But it cannot be denied that a man's practical experience is the chief factor in respect to the safety of operations in his charge. Let me say that there are mines now in charge of certified men that, in my opinion, would be safer in the hands of some uncertified practical miners.

I would not be understood, however, as opposed to the requirements of certified mine foremen. In many instances, I would make the test more rigid. I am merely claiming that the possession of a certificate does not indicate that its holder is a safer man to take charge of a mine than an experienced miner who holds no certificate. The fact is that the one is authorized and the other is not.

The Question To Be Decided

Drawing a conclusion from these thoughts, the question arises, Do the conditions brought about by the war warrant the employment of safe practical men to act as mine foremen, without regard to the authorization required by law? Assuming that the conditions became such that there was an inadequate supply of certified men to take charge of the mines, should this fact be permitted to interfere with public interests and welfare?

As Mr. Noone has remarked, "Coal mines must continue to run and competent men must be placed in charge, whether they are certified or uncertified." It is my belief that safe and practical men, though uncertified, must be employed, in such an emergency, to supply the lack of certified men. However, the war and its resulting conditions must not be made an excuse to employ irresponsible, uncertified miners as mine foremen, for the purpose of getting cheap bosses, or men who will evade the mining laws in order to get out cheaper coal.

John Rose,
Dayton, Tenn. Former District Mine Inspector.

Preventing Mine Accidents

Letter No. 9—I was much interested in reading the letter of W. A. Barrett, *Coal Age*, July 14, p. 72, as his ideas conform very largely to my own, particularly in respect to carrying dynamite or other high explosives into the mines.

In the beginning of his letter, Mr. Barrett refers to the man who "locked the stable door after his horse was stolen." Well, if he had another horse, locking the stable door will save him from the same fate as the one that was stolen. It shows that the man learned the lesson taught by his first error.

Referring to the miner taking powder and detonating caps into the mine in a careless unprotected manner, it seems to me that Mr. Barrett's suggestion of "a padded bag or sack" for carrying these dangerous articles is a good one. Let me add that it might be well for each miner to provide himself with a belt to which are attached two boxes so arranged that one would hang on each side of his waist. One of these boxes should be made to hold the powder cartridges, while the other is fixed to hold the detonating caps. The boxes should be made of tin and covered with leather and locked.

In no case should detonators and explosives be carried together; they should always be kept separate. The fuse could be carried in a sack arranged on the outside of the powder box. Miners so equipped would not have to wait at the bottom of the shaft, as described in Mr. Barrett's letter, for their powder to be sent down to them, but could proceed at once to their working places. On reaching his place, each miner should take off his belt and stow his explosives and caps in his box where they will be safe until required for use.

Dynamite and other high explosives are often extremely sensitive to a jar or shock. The grade of dynamite used in these mines is 90 per cent. nitroglycerin, and it is important to keep it where it will not be exposed to too much heat, as well as to protect it from any jar or blow that it might receive in careless handling.

While it may not be exploded by a spark, dynamite will take fire and burn should a spark come in contact with the powder. The burning of the dynamite may or may not result in its explosion; but, in order to prevent a possible accident in its use, it is necessary to avoid these causes.

C. McManiman.
Rawdon, Que., Canada.

Letter No. 10—As stated by Fred B. Hicks, in his letter, *Coal Age*, July 21, p. 128, the greatest number of accidents occurring in mines are those caused by the fall of roof and coal. In looking up data on this subject, I find that 80 per cent. of all fatal mine accidents relate to persons who had little or no experience in the mining of coal.

In placing the blame for these accidents, it hardly seems fair to make the mine foreman responsible, unless it can be shown that he has neglected to give the necessary instruction to his men and to place those who are not familiar with mining conditions, in charge of an experienced miner and expect him to look after them.

In the Rocky Mountain region, where I am located, there seem to be very few practical miners left, and as a consequence it has become all the more important to supervise the work of the men and give them the instruction they need to make themselves safe. For some time past I have been employed in this capacity.

Duties Performed by a Safety Inspector

My duties are those of a "safety inspector." I visit each working place one or more times a day to ascertain that it is in good condition and properly timbered. I examine the roof and face of coal, give any needed instructions to the men in regard to drilling their holes, mining the coal and timbering their places. At the same time I take their orders for timber, rails, ties, etc. Although some of the men show a little stubbornness, they take my instructions, in general, quite cheerfully.

Owing to the scarcity of good miners, there seems to be a growing need of supervision of the work, and my experience teaches that there should be employed in every mine one or more men whose duty it is to look after the safety of the inexperienced miners and see that they are working under safe conditions. I believe this is the surest way of reducing the percentage of accidents occurring daily in our mines.

Walsenburg, Colo. Robert A. Marshall.

Inquiries of General Interest

Collapse of Drum in Deep Winding

Several instances have come to my notice of the collapse of winding drums in deep winding. In one instance a hoisting engine that had been used at a shaft 200 ft. in depth was later installed at a shaft 900 ft. deep. Except for the increase due to the greater length of rope, the weight hoisted was practically the same in the deeper shaft as in the more shallow shaft, as the same cages and cars were used in both cases.

No difficulty had been experienced in hoisting from the first shaft, but as soon as hoisting began at the deep shaft, one acquainted with stress sounds could easily tell that the drum was in distress, and it was not long before it collapsed. Although three such accidents occurred, the company did not seem to think that it was due to the increased number of laps on the drum.

In another instance with which I was acquainted, a similar collapse of a winding drum took place at a mine opened on a steep pitch, after the slope had been extended to a greater depth and it became necessary to hoist trips from the lower lifts. In this case, also, except for the increased length of rope, the weight hoisted was the same in each instance.

In explanation of this difficulty, I claim that, although the tension on the rope is practically the same in each case, the greater number of coils on the drum, in the deeper hoist increased the pressure and caused the collapse of the drum.

The question I would like to ask is, Assuming that the tension on the hoisting rope remains unchanged, will the pressure tending to collapse a winding drum be practically double when the number of coils is doubled? In other words, assuming that the weight hoisted, including the increases in the length of the rope, is the same in each case and the diameter of the winding drum is the same, will the pressure tending to collapse the drum be greater when hoisting from 1000 ft. of depth than when hoisting from a depth of 500 ft.?

Pikeville, Ky. CHARLES A. SINE.

When hoisting a given load, the rope winds on the drum under a tension due to the load including the friction of the hoist. In hoisting from a deep shaft or slope, the load and the tension on the rope are greatest as the cage starts from the bottom, owing to the weight of the rope hanging in the shaft. Ignoring this comparatively slight difference, however, the tension of each of the several coils of rope wound on the drum is practically the same for the same hoist.

The unit pressure of each coil, or the pressure of a single coil per unit of length, is then equal to twice the tension on the rope divided by the diameter of the drum. The unit pressure so obtained is exerted, around the entire circumference of the drum, in the direction of the radius of the drum or toward the center of the drum shaft and is what may be called the "collapsing pressure," per unit of length, of a single coil.

The strength of a hoisting drum should always be designed for this unit pressure, which is practically the same for all the coils, regardless of their number. The failure of a winding drum, however, is often due to the weakness of the drum shaft. The bending moment exerted on a long drum, in winding from a deep shaft, may cause the rupture of the drum shaft or result in an undue strain being brought on the surface of the drum, which is not designed for such bending stress. We have known of instances of collapse from this cause. It frequently happens that an undue strain is brought on the drum shaft by the uneven settlement of the foundations supporting the journals. This must be carefully guarded against by providing solid foundations for these bearings where they are separated from the engine bed.

Artificial Respiration

A controversy was recently started in our first-aid camp, growing out of a discussion as to what method of resuscitation was best to employ, in order to restore respiration when breathing had ceased as the result of shock or from other cause.

Several methods were discussed, and I committed myself so far as to say that, in my opinion, no one method could be considered as superior to all others in every case. I claimed that conditions would often determine the particular method to be employed. This may or may not be true, and yet it appeals to me as reasonable that better results could be obtained by using the method that seems most applicable to the case in hand.

Inasmuch as this is an important question and of great interest to all first-aid workers, let me ask that it be thoroughly discussed in *Coal Age*, so that we can have the benefit of the ideas and experiences of others in this regard. I am not asking this for the purpose of discouraging the use of any one method of resuscitation, but solely to ascertain whether it is true that the different methods employed are each adapted to produce the desired results more quickly under different conditions, as when the victim is overcome by gas, rendered unconscious by electric shock, a blow or other cause, or rescued from drowning.

Berlin, Penn. JOSEPH A. GREAVES.

We hope that the suggestion of this correspondent will meet with a hearty response by those experienced in first-aid work. There can be no question but that the conditions that have led to a cessation of breathing in the body call for a somewhat varied treatment. When a person has been rescued from drowning, the lungs are more or less filled with water, which must be drained before air can be introduced and breathing restored. On the other hand, a person overcome with gas is differently affected, and the same is true when the action of the lungs has been halted by reason of a shock that has temporarily paralyzed the nervous system. Let us have a free discussion of these conditions.

Examination Questions

Illinois Mine Managers' Examination Springfield, June 11, 1917

(Selected Questions)

Ques.—The intake current of a mine is 50,000 cu.ft. of air per minute, the ventilating pressure, 13 lb. per sq.ft. The temperature of the intake is 20 deg. F.; the temperature of the return air is 70 deg. F. Calculate the volume of the return air current per minute, according to the rules of expansion of air due to the increase of temperature and decrease of pressure in the return current.

Ans.—The volume of the return current is expanded by the rise of temperature and the fall of ventilating pressure, the increase in volume being proportional to the absolute temperatures and inversely proportional to the absolute pressures in the intake and return airways, respectively. Assuming a normal atmospheric pressure of 14.7 lb. per sq.in. or, say 2117 lb. per sq.ft., and a blowing system of ventilation, the absolute pressure on the intake would be 2117 + 13 = 2130 lb. per sq.ft., while it is only 2117 on the return airway. The absolute temperatures on the two airways are: Intake, 460 + 20 = 480 deg. F.; return, 460 + 70 = 530 deg. F.

For the increased volume of the return air current, we have, therefore,

$$50{,}000\left(\frac{530}{480}\times\frac{2130}{2117}\right) = 55{,}550\ cu.ft.\ per\ min.$$

Ques.—What thickness of steel plate is required in the shell of a cylindrical boiler 60 in. in diameter, for a safe working pressure of 100 lb. per sq.in., the tensile strain on the boiler plate not to exceed 8000 lb. per sq. in., no allowance being made for joints?

Ans.—The internal pressure tending to tear the boiler shell apart is resisted by the area of metal in the two opposite sides of the shell. Considering a single slice of the shell 1 in. in width, the area of metal on the two sides, expressed in square inches, is equal to twice the thickness t of the shell. Calling the allowable stress in the metal, f, in pounds per square inch, the total resisting stress is $2\,tf$. The internal pressure exerted by the steam on this section of the shell is equal to the gage pressure p, in pounds per square inch, multiplied by the diameter of the shell, in inches. Therefore, equating these values, we have

$$2\,t\,f = p\,d \text{ and } t = \frac{p\,d}{2\,f} = \frac{100\times 60}{2\times 8000} = \tfrac{3}{8}\text{ in.}$$

Ques.—What is the principal reason cross-entries, in longwall, are driven at an angle of 45 deg., instead of at right angles with the main entry?

Ans.—The principal reason for driving diagonal roads in longwall work is to shorten the length of haul from all parts of the working face to the shaft bottom. Diagonal roads also present oblique angles at all points where the crossroads or gateways join them and where they enter the main roads which greatly assists haulage.

Ques.—The downcast shaft of a mine is 16 ft. long, 10 ft. wide and 500 ft. deep; the upcast shaft for the same mine is 12 ft. long, 8 ft. wide and the same depth as the downcast. The quantity of air passing into the mine is 150,000 cu.ft. per min., and as the result of an admixture of gas, the quantity leaving the mine is found to be 156,000 cu.ft. per min. What pressure, then, in inches of water gage, is required to pass the ventilating currents through these two shafts?

Ans.—The rubbing surface s, sectional area a, and velocity v of the air passing in each shaft are first found as follows:

For the downcast shaft, $s = 2(10 + 16)500 = 26{,}000$ sq.ft.; $a = 10 \times 16 = 160$ sq.ft.; $v = 150{,}000 \div 160 = 937.5$ ft. per min.

For the upcast shaft, $s = 2(8+12)500 = 20{,}000$ sq.ft.; $a = 8 \times 12 = 96$ sq.ft.; $v = 156{,}000 \div 96 = 1625$ ft. per min.

The water gage corresponding to the pressure absorbed in passing the air currents through each of these shafts is

$$\text{Downcast, } p = \frac{0.00000002 \times 26{,}000 \times 937.5^2}{160 \times 5.2} = 0.55\ in.,\ nearly$$

$$\text{Upcast, } w.\ g. = \frac{0.00000002 \times 20{,}000 \times 1625^2}{96 \times 5.2} = 2.11+\ in.$$

Ques.—What is the practical working difference between a dynamo and an electric motor, in their actual application to electric power?

Ans.—A dynamo is a machine for converting mechanical energy into electrical energy. The device consists of a number of conductors so arranged that they can be moved across a magnetic field with the result that an electromotive force is set up in the conductors, by virtue of which a current is generated in a closed circuit. The term "generator," which is another name for dynamo, better describes its purpose.

A motor, on the other hand, is a device for converting electrical energy into mechanical energy. The construction of an electric motor is identical with that of a dynamo or generator. Its action, however, is the direct reverse of the action of a generator. In the case of the motor, an electric current is passed through the conductors and sets up a reaction in the magnetic field, thereby producing motion in the armature carrying the conductors.

Thus, while, in a generator, motion is imparted to the armature by a steam engine or other source of power and the reaction between the conductors and the magnetic field produces a current in a closed circuit, in the case of a motor the action is the reverse of this. In the operation of a motor the electric current is the initial force, which, passing through the conductors, reacts on the magnetic field to produce motion in the armature, as just explained. The dynamo is thus a generator of electricity, while an electric motor utilizes the electric current to produce motion in a mechanical system.

Coal and Coke News

Harrisburg, Penn.

J. D. O'Neill, State Insurance Commissioner and Chairman of the State Workmen's Insurance fund, has announced that a revision of the present compensation insurance rates on bituminous coal mining will be made. He says in a statement that affects all bituminous coal operators and compensation insurers of coal mines that the basic rate of $3.83 per $100 of payroll and the $2.80 adjusted rate are more than fair to the operators and they have no cause for the complaint which has been raised. The statement follows:

"The action of the insurance department with respect to compensation insurance rates on bituminous coal mining has been the subject of much criticism by insurance agents and coal operators. It has been alleged by sundry insurance agents that the insurance department was arbitrarily compelling the stock companies to charge excessive rates for this class of insurance.

When the compensation act of Pennsylvania went into effect, there was no available compensation experience upon coal mines. It was necessary, therefore, to develop the insurance rates from accident statistics of the state mine department and the United States Bureau of Mines. From these statistics there was developed a basic rate of $3.83 per $100 of payroll, which rate includes a loading of 30 per cent. for management expenses. The experience of 1916 indicates that this expense loading is somewhat insufficient, the actual expenses of the companies having been approximately 33 per cent. of premiums.

Along with the basic rate the insurance department approved a rate schedule which was intended to produce, and has produced, substantial reductions in premium as compared with basic rates. In point of fact, the average adjusted rate on bituminous coal mines at the present time is $2.80, or 73 per cent. of the basic rate. The experience of 1916 as so far reported indicates that the actual insurance cost on bituminous coal mines is something more than $3 per $100 of payroll. Hence the bituminous coal operators have no ground of complaint that their present rates are excessive.

The most serious objection to the present schedule is that it does not equitably distribute the insurance burden. In other words, the schedule does not produce rate differentials which correspond to actual differences of hazard as between different mines and different mining districts. In particular the schedule fails to produce a sufficient rate differential between those mining districts which have the best record and those which have the worst record in point of accidents. Thus, at the present time the average adjusted rates are $2.72 in Allegheny County; $3 in Butler County; $2.77 in Cambria County; $2.64 in Clearfield County; $2.68 in Fayette County; $2.83 in Huntingdon County; $2.60 in Indiana County; $3.33 in Somerset County; $3.11 in Tioga County; $2.91 in Washington County, and $2.71 in Westmoreland County—rates which obviously do not correspond to the hazards of these counties as disclosed by the state mine department records. This result could not have been foreseen in advance of experience.

The insurance department has given prolonged and serious consideration to the subject with a view of producing rates more in accord with the differences in hazard of the several mining districts. It appears from the studies thus far made that the only method of accomplishing this result is to combine some form of experience rating with schedule rating. Under such a plan the accident experience of each operator for a period of, say, five years would be taken into consideration, as well as the physical conditions of his mine as disclosed by inspection.

A revision of the present schedule will be undertaken and pushed through as rapidly as possible in the light of all information available. The object which has been kept in view by the insurance department is to establish a rate and rating system which will require the bituminous coal operators, collectively and individually, to pay neither more nor less than the actual cost of their insurance."

The insurance department, as the result of study, came to the conclusion that the way to produce rates more in accord with the differences in hazard of the several mining districts was to combine some form of experience rating with schedule rating. The old line or Associated Companies also studied the subject, and in 1916 proposed a plan, the most important feature of which is a grade change for the height or thickness of the coal mined. The proposed charge amounts to approximately 8 cents per $100 of payroll for each foot of thickness about 4 ft.; that is, 8 cents for coal from 4 to 5 ft.; 16 cents for coal from 5 to 6 ft.; and 40 cents for coal from 8 to 10 ft. in thickness of seam. The theory of this differential charge is that the hazard from falls of roof and coal increases with increasing thickness of the seam worked. The insurance department disapproved the proposal pending further investigation.

"This investigation," continues the statement, "has now been completed. A detailed study of every fatality reported by the State Mine Department for the five years, 1911 to 1915, and of every mine reporting during said period, shows that the relationship between thickness of coal and fatality per 1000 workmen is not that which the Associated Companies assumed. The actual fatality rate throughout the state and in each important county is less in coal between 4 and 5 ft. in thickness than in coal under 4 ft., and is less in coal over 8 ft., than in coal from 6 to 8 ft. The proposal of the Associated Companies, therefore, would work an unfair discrimination against operators who are working coal from 4 to 5 ft. in thickness, or over 8 ft. in thickness."

Compensation and the great war bid fair to become tangled up before the State Compensation Board and the courts because of an action started before the board by Vice Consul M. Viti, of the Swedish Kingdom. Sweden is in charge of the interests of the Austrian empire during the war and the vice consul has asked for a ruling on what time is to be given for notice of claim.

Under the law a claim must be made by dependents of an alien workman killed in this state within a year, but Consul Viti has filed claims for dependents which set forth that they are to continue until the end of the war. This is because it is declared impossible to ascertain the whereabouts of dependents because of the war. The Compensation Board is rather inclined to go slowly about according the privilege of an indefinite claim period, which Pennsylvanians do not enjoy.

Formal notice has been served by M. Viti, who sets forth that severance of diplomatic relations has interrupted "ascertainments of full and complete particulars from the proper authorities as to relatives" in the empire and that he makes the claim for them in his representative capacity.

To grant claims would put money in legal possession of alien enemies which is contrary to the President's proclamation and to continue them without limit would be against the interest of state citizens in the same line of action. The case will be followed closely by coal companies who carry their own insurance.

Officers of the Department of State are getting ready to carry out the provisions of the act of June 28, providing that all persons engaged in business under an assumed or fictitious name must register at the Capitol, with the Secretary of the Commonwealth. The blanks for the registration have been filed. The new act will affect all individuals who conduct any business "under an assumed or fictitious name, style or designation." The requirements are that the real name or names and addresses of all persons owning or interested in the business and the name, style or designation under which the business is conducted must be registered. Where there is an agent this fact must be stated, too.

The act carries a penalty not only for failure to comply, but also for any false statement filed. It is said that a number of coal companies will come under this act.

More than 100 members of the Pennsylvania Wagon Coal Shippers' Association at a meeting on July 30, heard a threat of discontinuance of car supply that spells ruin for their business. To forestall such an eventuality, the executive committee, accompanied by three attorneys, will go to Washington for a conference with Government officials.

Action of the Buffalo, Rochester & Pittsburgh R.R. in cutting off car supply to wagon shippers was discussed, but proceedings before the Public Service Commission were left to a newly formed organization in Clearfield County. President Anderson said he had information direct from Washington that similar action, under a war order by Secretary Baker might be expected from all the railroads on the ground that wagons and men in the wagon shipping business could be better used in farm work.

E. Walter Smith of Indiana County maintained that the Government's contemplated action would be less productive of results than to consider the coal supply from another angle citing the effect of liquor upon mine production. He maintained that with miners getting almost any price they demand, drunken sprees which cost one or more days of idleness followed each pay day. He expressed the sentiment that prohibition would better solve the production problem.

The wagon shippers claim to represent an annual coal production of 3,000,000 tons, employing 6000 miners.

The Commissioner of Labor has appointed the men to serve on the board to be in charge of the employment bureau to be opened in Scranton under the auspices of the state, and which is the first bureau of this kind to be opened in the anthracite region by the Commonwealth.

The six are: J. A. Lansing, president of the Scranton Stove Works; George F. Hower, of Hower & Stender; F. A. Hemelright, vice president and general manager of the Temple Coal Co.; Steve McDonald, president of the Central Labor Union; John T. Dempsey, district president of the United Mine Workers, and Miss Jessie Bennett, of the International Correspondence School.

Since the law creating the employment bureau was passed in 1915, bureaus have been opened in the following cities: Philadelphia, Pittsburgh, Altoona, Johnstown and Harrisburg. In the past year the five local bureaus have placed 25,000 men in employment and have listed thousands of men and hundreds of industries so as to supply future needs.

The following committee has been appointed to supervise shipments of coal from the Central Pennsylvania fields under the arrangement of pooling coal at seaboard points: Samuel Bell, Jr., Madeira Hill & Co.; F. H. Wigton, Morrisdale Coal Co.; J. T. Hilles, Hatfield & Hilles; T. H. Watkins, Pennsylvania Coal and Coke Co.; C. A. Owens, Imperial Coal Co.; W. L. Scott, Commercial Coal Mining Co.; G. C. Foedisch; Whitney & Kemmerer; W. A. Marshall & Co., J. P. Cameron, Royal Coal Co., and Harry Boulton, Maple Run Coal Co., deputy commissioner.

PENNSYLVANIA

Anthracite

Hazleton—The Cranberry Creek Coal Co. has practically completed the installation of equipment for the electric operation of its breaker in all departments. The improvement has been under way for the past year. This is the first colliery in the Lehigh field to use electric energy exclusively for operation. The power will be furnished by the Harwood Electric Co.

Hazleton—Anthracite coal companies of the Lehigh coal field continue to suffer from car shortage, which is more acute now than ever. Few collieries are operated steadily but are kept going spasmodically as cars are received from the railroads.

Harwood Mines—The Harwood Coal Co. has completed the installation of an electrically operated steam shovel at its local culm banks, the first to be placed in service in the anthracite region. Electric energy is furnished by the Harwood Electric Co.

Dunmore—A change among the Pennsylvania Coal Co. officials took place on Aug.

1, when Thomas Huntley, outside foreman at No. 9 colliery took the place of David Girvan as superintendent, who resigned to become superintendent of the Diamond colliery of the Lackawanna company. The new outside foreman at No. 9 will be John Miller.

Bituminous

Scottdale—The H. C. Frick Coke Co. held a first aid meet at Loucks' Park recently for teams from all their plants. First prize of $60 was captured by the Juniata team with a percentage of 97⅞ with Standard second with 96⅝ and Gates third. The meet was largely attended and a parade from the Frick offices to the field was headed by the G. A. R. band.

Homer City—The Community Coal Co. of Toronto, Canada, has started operations on the Findley farm, which it recently purchased. The new plant will be about two miles south of the operations of the Meco Coal Co. E. G. Stanford is superintendent in charge of the new work.

Clymer—H. H. Hetrick and associates of this place have leased the McCoy tract of coal from R. F. Pitcairn of Cherry Tree. Shipments will be made over the New York Central and Pennsylvania railroads. The mine is located on the Cherry Tree Branch.

Cresson—Twenty-four teams, aggregating 156 miners, have been entered in the first aid meet to be held at Cresson, August 25, under the auspices of the Y. M. C. A. Practically all the large coal companies in that section of the field will be represented.

Greensburg—A. W. Hart, H. O. Markle of Connellsville and J. W. Overholt of Mt. Pleasant have purchased 70 acres of coal land from Cyrus Markle and others for a consideration of $13,916.17. The deed was recorded here a few days ago. The coal is the 4 ft. Sewickley bed and will be developed at once by the new company.

Revoloc—The Monroe Coal Co. has struck coal in one of its new shafts. The coal was reached at a depth of 356 ft. Extensive plans for the development of the new field are under way. The new branch of the Cambria & Indiana R.R. connecting with the New York Central is within a half mile of the new town.

Leckrone—Three men were killed, the boiler house, engine room, electric plant and a number of dwelling houses as well as the tipple were greatly damaged and the coal plant tied up for at least two weeks when two boilers let go at this plant on the afternoon of Aug. 1. As a result of the accident over 500 men will be thrown out of employment until repairs are made.

WEST VIRGINIA

Thoburn—The Consolidation Coal Co. has donated a site for a high school building to be erected at this place. The building will be constructed at a cost of $10,000 and will be built on one of the most valuable properties owned by the company in the Lincoln district. The board of education will lay the levy to provide the funds and construction work will be started as soon as possible. The Consolidation Coal Co. is not only donating a site but will assist in the erection of the building.

Fairmont—Invitation has been sent out by D. R. Lawson, secretary of the Central West Virginia Coal Operators' Association, announcing a two-day mass meeting of all the coal operators in central and northern West Virginia to be held at Deer Park, Md., on Aug. 10 and 11. It is stated that F. S. Peabody, chairman of the coal committee of the Council of National Defense and W. J. Harris, chairman of the Federal Trade committee, also ex-Governor John F. Fort, a member of the Federal Trade commission, will be present at this meeting.

Gary—The announcement was recently made by the United States Coal and Coke Co. that it had acquired a boundary of coal lands in Letcher and Harlan Counties, Ky., on the Louisville & Nashville R.R., and that development of these lands will begin at once. It is expected that $3,000,000 will be expended in developing this new property. The output will be used by the United States Steel Corporation and shipped to Joliet and South Chicago, Ill., and Gary, Ind. No coke ovens will be erected at the Kentucky plant. It is expected that the new operations will employ at least 2000 men.

KENTUCKY

Ulvah—The Klenekole Mining Co. organized here last week is starting the development of the W. B. Lusk coal land tract at the mouth of Line Fork on the main line of the Louisville & Nashville R.R. It is expected that the first shipments of coal will be made within 30 days.

Harlan—The Howard-Hensley Coal Co. is beginning the work of development of coal lands along Poor Fork of Cumberland River in this (Harlan) county, where it will develop at Laymen. It is planned to have an output of 500 tons daily.

Jenkins—The selective draft, it is said, has hampered mining operations in the Jenkins-McRoberts-Fleming coal fields to a marked extent. It is feared that the coal companies in eastern Kentucky will suffer owing to the draft. Efforts, however, will be made to hold as many men as possible. It will be shown that coal is a necessity for the Government to carry on hostilities and with the selective draft in force mining work will suffer as a result.

Whitesburg—The Kentucky River Power Co., having a large central station at Lothair in the Perry County field, has made the announcement that it will extend transmission lines into the coal fields immediately surrounding Whitesburg—construction to be started at once—to supply the operating companies. Already the lines are being extended into the Carr's Fork-Rockhouse section.

Pineville—Damages to the amount of $10,000 were caused to property of the White Star Coal Co., at White Star, near Wilhoit, in Harlan County, when a 10-ton electric motor and 12 loaded three-ton mine cars were dumped over the company's incline. The damage was deliberate, it is charged, since it required that the powerhouse be entered and power turned on. The company has offered a reward of $1000 for the apprehension of the persons guilty, to which the Cumberland Valley Coal Operators' Association has added $500.

Frankfort—Three suits against the Chesapeake & Ohio Railroad Co. by coal operating companies, originally filed in the Circuit Court of Fayette County, Ky., have been transferred to the United States Court here. Plaintiffs are the Lundale Coal Co., the Amherst Coal Co. and the Buffalo Coal Co., asking a total of nearly $800,000 as damages suffered by reason of the failure of the defendant company to supply cars for transporting coal.

Covington—An order has been made by the United States District Court directing Receiver Matt Herold, of Newport, Ky., to sell 5000 acres of land near Spring Fork, Breathitt County, Ky., in a suit filed by the United States Mortgage and Trust Co., of New York, against the Kentucky Coal and Timber Development Co. The suit involves a claim of $1,000,000 secured by a mortgage on the property to be sold, and has been pending for two years.

OHIO

Columbus—Setting aside 6,000,000 tons of coal for the domestic users of the state was only the beginning of the work of the Ohio Clearing House, of which J. M. Roan is chairman. This organization will look after the production, distribution and retailing of coal for the domestic user in Ohio. The second step in its work has been to take up the question of retail prices. It has already started to ascertain a reasonable price for retail coal in the different cities of the state. For this latter purpose, retailers from the various sections of the state have been called in and data secured as to the cost of handling the coal. As a result of the meeting of Columbus retailers the Capital City prices have already been determined. Dayton retailers appeared later and a little higher scale was fixed for that city.

INDIANA

Boonville—Government reports that Warrick County, Ind., has 175 sq.mi. of undeveloped coal lands have sent hundreds of investors into the field to investigate conditions. Leases are being taken or property bought outright and development work is being undertaken on rather an extended scale.

ILLINOIS

West Frankfort—Four miners were recently injured in an explosion in Mine No. 18 here. There was little property damage. Evan John, Director of the State Department, was notified and state inspectors were sent to make an investigation. The cause of the explosion has not been made known.

Carlinville—A. W. Crawford announces that he has found a purchaser for the extensive coal lands in Macoupin County on which he obtained options several weeks ago. His options cover about 50,000 acres in this vicinity and in the region of Dorchester, extending nine miles into Madison County. Extensive testing operations are in progress. Twenty-nine drill holes have been sunk and about 20 more are to be sunk. It has not been made known how much of the acreage is embraced in the pending deal. In 1913 Crawford negotiated the sale of 25,000 acres in Macoupin County. Judge J. B. Vaughn of Carlinville has been appointed to examine the land titles. It will take more than a year to prove them up.

Belleville—A master's deed showing the transfer of all the property of the Southern Coal and Mining Co., which was purchased more than a year ago by James Y. Lockwood of St. Louis, to the Southern Coal, Coke and Mining Co., has been filed in the office of the Recorder of Deeds here. The mines included in the transfer are Walnut Hill, Avery, Oak Hill, Glendale No. 2, Muren No. 1 and Shiloh in St. Clair County, and Muren No. 2 and Germantown in Clinton County. Coal lands in each county also are transferred.

Farmington—A company in which Frederick Day of this place and a number of Oconomowoc capitalists are interested, is sinking a shaft near here. Joseph Whitehead is superintending the work. The mine will be connected by a switch with the M. & St. L. R.R. Walsh Bros. of Clinton, Ia., have obtained options on 680 acres east of here and it is understood that they too will sink a shaft.

Weaver—The "ghost" whose pranks terrorized the miners at the local mine and caused them to refuse for three days to enter the mine has been arrested. This proved to be John Isselberg. His motive in "haunting" the mine is not known, but Federal officials are investigating on the theory that he wanted to frighten the men away so that the coal output would be reduced. If that was his purpose he succeeded well. In the three days that the men refused to work 12,000 tons of coal were kept from the market.

Springfield—A special committee of the State Council of Defense, composed of Samuel Insull, David E. Shanahan, Lieutenant-Governor Oglesby, Levi Mayer and John P. Hopkins, recently had a conference lasting several hours with Governor Lowden concerning steps which are proposed to be taken to regulate the price of coal in Illinois. It was explained that the conference was necessitated by the fact that the Governor was away when the Council of Defense was considering the coal situation and was represented by Lieutenant-Governor Oglesby. At the conference a summarized report was made to the Governor so that he would be fully informed as to the situation. It is not improbable that a special session of the Legislature will be called. This will depend upon the attitude of the operators. Gov. Lowden is said to be opposed to it except as a last resort. The Governor cancelled an appointment he had with Rush C. Butler, of the Illinois Coal Operators' Association and a committee of operators, telling them he would meet them later. It is understood that he wished to inform himself fully about the situation before meeting them.

IDAHO

Boise—A survey of Idaho's every mining district, with a view of collecting samples not only from metal mines but coal mines as well will be commenced shortly by Thomas Varley, metallurgist in charge of ore-dressing work for the U. S. Bureau of Mines, who is now in Boise in conference with mining men. Mr. Varley will be assisted by Dr. E. K. Soper, professor of mining at the University of Idaho and Prof. D. C. Livingston, head of the university geology department.

Foreign News

Vancouver, B. C.—Normal conditions in the smelting industry of British Columbia are likely to be restored by the first of September by the additional employment of miners in the coal mines since the settlement of the strike recently. Mines throughout the Crow's Nest district are working at 75 to 80 per cent. capacity, except the Crows Nest Pass Coal Co. which is operating at about 50 per cent. capacity. The International Coal and Coke Co. will be running to full capacity by the middle of August.

Cordova, Alaska—Three new beds of coal have been opened up to a width of 14 ft. at the Clark Davis mine in the Bering River coal field. The Alaska Anthracite railroad, under construction from Katalla to the fields will be completed and hauling coal to market in September.

Personals

Duncan Reid, of Flint, Mich., has been appointed mine inspector for that state.

E. G. Stanford has been placed in charge of the opening of the new mines of the Community Coal Co. near Indiana, Penn.

Thomas H. Shaw, formerly state mine inspector of Arkansas, has been appointed purchasing agent for the National Supply Co., of Lincoln, Neb.

John Crum, Sr., of Williamson, W. Va., recently purchased 60 acres of coal land at Crum, W. Va. It is believed that he will begin developing this property at once.

H. E. Morris, industrial agent of the Frisco R.R. of St. Louis, has been appointed coal agent of the system, succeeding Eugene McAuliff, who resigned some time ago.

Charles Waters, for several years past with the E. C. Searles Coal Co., resigned the first of the month to accept a position as sales manager for the Avery Coal and Mining Co. of St. Louis.

Tipton Stillwell, for the past five years representative of the Johnston City Coal Co. in St. Louis, has resigned to accept a position in Chicago as representative of the West Virginia Coal Co. of St. Louis.

C. W. Stuart, formerly superintendent of the Lucerne plant of the Rochester & Pittsburgh Coal and Iron Co., has accepted the position as private mine inspector for the Davis Coal and Coke Co. at Thomas, W. Va.

Herbert A. Meyer, assistant secretary of the interior, is on his way to Alaska to make an inspection of the Matanuska coal fields and particularly the coal mines opened by the Alaskan Engineering Commission.

Joseph Northover, formerly of Seanor, Penn., and employed as mine foreman for the Berwind-White Coal Mining Co. for the past seven years, has accepted a position as superintendent for the Maple Ridge Coal Co., near Holsopple, in Somerset County, Penn.

W. S. Haddaway, for several years the St. Louis sales manager of the St. Louis-Carterville Coal Co., has resigned and the office is closed on account of that company selling its properties to the Duncan Coal Co. The E. C. Searles Coal Co. of St. Louis will handle the output.

Roy L. Adams, city engineer of Herrin, Ill., and resident mining engineer, has disposed of his business to the firm of Mautz & Oren, of Benton, Ill., and will enter the employ of the Old Ben Coal Corporation in the capacity of chief mining engineer with headquarters at West Frankfort, Ill.

L. V. Boord recently took up his duties as field manager for the newly organized Crescent Fuel Co., in Fairmont, W. Va. This company is a brokerage firm and has contracts to sell the outputs of several mines which are now in operation and a number of others soon to be put under development.

Thomas D. Thomas, superintendent of the Aultman mines of the Jefferson & Clearfield Coal and Iron Co., has been made superintendent of the Lucerne mines of the Rochester & Pittsburgh Coal and Iron Co. near Indiana, Penn. Mr. Thomas is succeeded at Aultman by James Cummings, formerly mine foreman of No. 3 mine.

M. B. Coulter, of Braxton County, has been appointed deputy inspector of mines for the fifth mining district, including the counties of the northern Panhandle, by Earl Henry, chief of the State Department of Mines of West Virginia. Mr. Coulter will succeed John T. McMahon, who resigned. His headquarters will be at Moundsville.

Frank Farrington, president of the United Mine Workers of Illinois, has about decided that he will not go to England to attend the British Trade Union Congress, to which he was elected fraternal delegate at the last convention of the American Federation of Labor. He believes that greater duties demand his attention here.

Samuel J. Jennings, superintendent of the Diamond, Brisbin and Manville collieries of the Delaware, Lackawanna & Western Railroad Co., has resigned that position to become general manager of the Price-Pancoast Coal Co., succeeding John H. Bryden. He assumed charge on Aug. 1, at Throop. Mr. Bryden retains his interest in the Pancoast company and the Scranton Coal Co.

John King was on Aug. 4 presented with a $50 Liberty Loan bond by the C. M. Dodson Coal Co., as a reward for working every day during the last month. A bond will be given away at each of the three operations of the company once every 30 days to men who are found faithful in pushing production of anthracite to the limit. The names of all who put in full shifts are placed in a box and the name drawn gets the war bond.

J. R. Fitzer, who has been a traveling salesman with the Buckeye Coal and Ry. Co. for years when it was the Sunday Creek Coal Co., has been made sales manager of the company, succeeding George H. Schwartz, who resigned to become a partner with Hatton, Brown & Co., Inc. Mr. Fitzer has taken up his new duties. He is well known in Ohio and Michigan territory, having been identified with the selling end for many years.

Evan John, director of the State Department of Mines and Minerals, has appointed the following state mine inspectors: First district, Walter A. Waite, Spring Valley; Second district, James Taylor, Peoria; Third district, Thomas P. Back, Canton; Fourth district, Robert Reavely, Springfield; Fifth district, Joseph Haskins, Catlin; Sixth district, Thomas A. Lewis, Panama; Seventh district, Robert Pettigrew, Danville; Eighth district, Thomas C. Wright, Belleville; Ninth district, Joseph C. Thompson, Elkville; Tenth district, John E. Jones, Benton; Eleventh district, George Bagwell, Eldorado; Twelfth district, H. T. Bannister, Benton.

Richard Williamson, mine foreman at the Richmond No. 3 colliery of the Scranton Coal Co., for the past 20 years and one of the best known mining men in Lackawanna County, died on July 31, at his home, after an illness of 8 weeks. He was 63 years of age. Mr. Williamson for a time was a breaker builder for the Delaware & Hudson Co., and 30 years ago was made foreman of the Pancost colliery, a position he held for 10 years, until he went with the Scranton Coal Co. Mr. Williamson is survived by his wife, one daughter and one son.

Industrial News

Layton, Penn.—Henry M. Shaw, of the Shaw Insulator Co., of Newark, N. J., is opening 2000 acres of coal land at this place.

Fairmont, W. Va.—D. R. Lawson, secretary of the Central West Virginia Coal Operators' Association, reports that the car supply during the month of July has been better than at any other time since early last fall. He reports also that this supply will probably continue to remain good.

East St. Louis, Ill.—A serious problem confronts the retail dealers in this city in the way of delivering coal. All the domestic coal orders are being held up on account of the inability to secure labor to deliver. Since the race riots a few weeks ago the negro population has left the city and it is impossible to get white drivers.

Columbus, Ohio—Employees of the New York Coal Co., in Chauncey, Floodwood, Buchtel, Cawthorn and Monday, Ohio, raised a total of $1,060.25 recently for the Red Cross fund. Through their general superintendent, P. C. Morris, the company has given a sum equal to that raised at the mines, the total amount being $2120.50.

Pittsburgh, Penn. — The Asbestos Protected Metal Co., recently announced the temporary closing of its Cincinnati office on account of the fact that E. G. Irwin, Cincinnati manager, has entered the Ohio National Guard. Communications intended for the Cincinnati office should be addressed to the home office in the First National Bank Building, at Pittsburgh.

New York, N. Y.—The receivers of the Aetna Explosives Co., Inc., recently announced to the trade that they had received orders from the court to continue the company's business in all its branches. Accordingly, they are vigorously prosecuting the manufacture and sale of military explosives to the United States and the allies, but are devoting particular attention to domestic business.

St. Louis, Mo.—The first up-river shipment of coal which left St. Louis last week for St. Paul was New Baden two-inch lump shipped by the Southern Coal, Coke and Mining Co. The tow was composed of six barges, each of which carried upwards of 1000 tons. It is expected that the entire cargo will be taken by the Northern Pacific R.R., which has heretofore drawn its supplies from the East. The Southern company is the only one having a tipple for loading boats and barges. It is on the east side.

Columbus, Ohio—Ohio authorities are making progress in their plan to acquire or lease coal properties for operation by the state in order to secure a fuel supply for the use of state institutions. They now have under consideration a large acreage in southern Ohio which has been offered for this purpose. Operated with prison labor, it is estimated that coal could be produced at not more than $1.10 a ton at the mine. The property under consideration contains two good beds of coal, and can be leased on a fair royalty basis.

Anchorage, Alaska—Two mines in the Matanuska coal district, into which the government railroad is being constructed, are now producing coal for market. The mine of William Martin, on Eska Creek is employing 50 miners and has already shipped 3000 tons of coal to Anchorage. The daily production is 40 tons. The mine of the Doherty Coal Co. at Moose Creek has sold over 12,000 tons of coal to the Alaskan Engineering Commission. Forty men are employed. Both mines are leased from the government.

Columbus, Ohio—As an example of the wonderful growth of the coal industry on the Hocking Valley R.R., M. S. Connors, general manager, at the weekly luncheon of Columbus wholesalers, Aug. 2, told of the difference at this time and 25 years ago. Twenty-five years ago there were just 50 mining operations on the line. On May 17 of this year there were 175 tipple operations and 102 wagon mines. Applications for tracks and switches for 45 more tipple mines are on file with the officials of the railroad, making 322 operations in all, when the spurs are completed.

Reading, Penn.—Since the Reading Ry. started its heavy hard coal shipments to the New England States consumers here have become clamorous for their winter supply and dealers are assuring them that their time will soon arrive. During the last week of July, at least 15 long trains were sent to the Eastern States and more shipments are expected. Equally large consignments have been sent west by way of Buffalo. Some Reading yards are still bare and dealers, for the most part, are making deliveries for present necessities only. It is estimated that the 15 trainloads mentioned contained over 40,000 tons.

Pittsburgh, Penn.—The Duquesne Electric and Mfg. Co., with main office located in the Bessemer Bldg., Pittsburgh, and shops at Binler St. and P.R.R. East Liberty Station, has recently been incorporated with a capital stock of $50,000. It has also recently opened a branch office at Cleveland, Ohio, in the Marshall Bldg. This company's shops are completely equipped for rebuilding electrical machinery, such as motors, generators, mining locomotives, switchboards, gas and steam engines. The firm has been operating for over a year under the name of the Service Supply and Equipment Co. There is no change in the personnel of the company.

Philadelphia, Penn.—The sale by the Lehigh Coal and Navigation Co. of its electric interests, negotiations for which have been going on for some months, was consummated on Aug. 3, by the delivery to the Lehigh Power Securities Corporation of all the stock of the Lehigh Navigation Electric Co., which carries with it a controlling interest in the Harwood Electric Co., the Schuylkill Gas and Electric Co., and several other affiliated coal, water and power subsidiaries doing business in the anthracite region of Pennsylvania. The consideration received by the Navigation company was $1,500,000 cash and 61,000 shares of stock in the securities corporation. Among the most important details connected with this transfer are contracts which assure the Navigation company a sufficient supply of electric power for the operation of its mines for the next 50 years and the electric plants an adequate coal supply for a like period.

Cleveland, Ohio—Interesting records have been compiled by the Eastern Ohio Operators' Association for the week ending July 28, which show the condition of the car supply and how the cars were used in taking care of railroad fuel in the eastern Ohio mining districts and the Lake and commercial trade. These records do not cover all of the mining operations of that section of Ohio, but are taken from the largest operations and thus they give a good index of conditions. The Baltimore & Ohio had a 70 per cent. supply during the week, of which 20 per cent. was for railroad fuel, leaving 50 per cent. for commercial and Lake business combined. The Pennsylvania had a car supply of 62 per cent. and 25 per cent. of this was for railroad fuel while the remaining 37 per cent. was for commercial and Lake cargoes. The Wheeling & Lake Erie had an 82 per cent. car supply for the week, using 25 per cent. for railroad fuel and 57 per cent. for Lake and commercial business. The car supply of the New York Central Lines was 70 per cent. of normal, of which 25 per cent. was for railroad fuel and 45 per cent. for commercial and Lake trade.

Market Department

GENERAL REVIEW

Anthracite easier due to the excessive heat wave. Very little spot bituminous coal offering except for bunker and foreign trade. Consumers also delay buying in expectation of further reductions. Car supply very bad in the Middle West.

Anthracite—The excessive heat wave has exerted a sentimental effect on the market which is easier than for many months. There is, further, a growing feeling that the big companies are going to make good on their promises of increased shipments which is doing much to relieve the tension. In fact, the steam quotations in sympathy with the lower price level on bituminous coal, are showing a distinct indication of weakness. On the other hand, there are incipient labor difficulties in the mining regions which are effecting production, while the shortage of miners is becoming generally more noticeable and operating interests are much concerned over what effect the draft will have on the labor supply. In the meantime, there are still many areas where the supply is deficient. Very considerable shipments continue to be made in box cars and there is no doubt that this has been an important factor in meeting the existing emergency.

Bituminous—It is very difficult to buy any coal in the spot market; the tendency is to observe the Government maximum, and when better figures are to be had on contracts and in the bunker and foreign trade, there is naturally very little coal being offered in this direction. In addition to this the car supply is limiting shipments to such an extent that there are occasional instances of fuel shortage, and some manufacturing plants are running on very narrow supplies. In view of the heavy Government requisitions, not only for their own uses but for the foreign governments as well, there is certainly not very much encouragement from the buyer's standpoint in the market, especially now that the fall business is in sight. The pooling arrangement is still too new to expect a very satisfactory result as yet, but reports indicate that the arrangement is progressing satisfactorily.

Lake Trade—There is a tendency among mine interests to delay purchases as long as possible in anticipation of further Government regulation, which will reduce prices still further. In the meantime the car supply is becoming more inadequate and promises to be still further accentuated when army concentrations become more general. On this account the jobbing interests are urging consumers to accumulate as much coal as possible, but their efforts are not meeting with much success. The car supply situation has become so serious at Cleveland that the operators there are holding daily conferences with the railroad men in hopes of facilitating shipments. Lake shipments from this point have been very seriously interfered with because of this and only about half the vessels at Cleveland have been able to get coal cargoes. The July shipments from Cleveland were half a million tons less than the same month last year. Reports from the Upper Lake ports indicate a very heavy shortage.

Middle West—The great publicity concerning further prospective reductions by the Government has limited the domestic buying very appreciably, but all surpluses have been readily absorbed by steam consumers. Car supply also fails to show any improvement, while the threatened switchmen's strike at Chicago precipitated such confusion in that section that it will take probably a week or longer to clean up. Labor shortage is also becoming an important factor, not only because of the shortage of men, but also the lessened efficiency which always accompanies a period of good wages. A large increase in the business from outlying points, including the extreme Northwest, and the South as far as the Gulf Coast of Texas, have thrown an extra burden on the Middle Western mines. Eastern coals continue very scarce in this market, the bulk of that tonnage now going into the Lake trade.

A Year Ago—Market steady on anthracite and production well absorbed. Bituminous stiffer and prices advanced. Spurt in the export trade. Middle Western situation quiet, but an active trade expected in the fall.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week for the past four months:

Boston	Year Ago	Aug. 11	Aug. 4
Clearfields	†$1.15@1.75	$4.15@4.50	$4.15@4.50
Cambrias and Somersets	† 1.45@1.90	4.40@4.75	4.40@4.75
Pocah. and New River[1]	† 3.00@3.25	5.14@6.50	5.14@6.25
Philadelphia			
Georges Creek (Big Vein)	†1.95@2.00	3.25@3.75	3.25@3.75
W. Va. Freeport	†1.30@1.35	3.25@3.75	3.25@3.75
Fairmont Gas mine-run	1.45@1.55	3.25@3.75	3.25@3.75
Pittsburgh (steam coal)[2]			
Mine-run	1.35@1.45	3.00@3.25	3.00@3.25
¾-in.	1.45@1.55	3.50@3.75	3.50@3.75
Slack	.95@1.00	3.00@3.25	3.00@3.25
Chicago (Williamson and Franklin Co.)[2]			
Lump	†1.65@1.75	3.45@3.55	3.45@3.55
Mine-run	1.20@1.30	2.70@2.80	2.70@2.80
Screenings	.90@1.00	2.70@2.80	2.70@2.80
Gross average[3]	†$1.48@1.66	$3.48@3.97	$3.48@3.84

Gross Averages[3]		1917	1916
Apr.	14	4.01@4.35	1.45@1.61
Apr.	21	3.83@4.14	1.46@1.62
Apr.	28	3.81@4.12	1.45@1.62
May	5	4.04@4.40	1.45@1.59
May	12	4.64@4.98	1.44@1.59
May	19	5.08@5.54	1.42@1.56
May	26	5.10@5.58	1.41@1.55
June	2	5.00@5.46	1.47@1.63
June	9	4.80@5.24	1.52@1.72
June	16	4.77@5.23	1.50@1.66
June	23	4.81@5.15	1.51@1.67
June	30	4.79@5.15	1.46@1.64
July	7	3.88@4.35	1.41@1.57
July	14	3.95@4.12	1.41@1.57
July	21	3.96@4.13	1.41@1.57
July	28	3.39@3.88	1.43@1.58
Aug.	4	3.48@3.84	1.45@1.60
Aug.	11	3.48@3.97	1.48@1.66

[1] F. o. b. Norfolk and Newport News. [2] Per net ton. [3] The highest average price made last year was $4.80@5.33 made on Nov. 25. *Price lower than the week before. †Price higher than previous week.

COAL PRODUCTION

The following is the weekly report on the production of bituminous coal and the causes of loss of working time, compiled by the Geological Survey, Department of the Interior, Aug. 4, 1917.

A decrease from 77.5 to 75.3 in the percentage of full-time capacity realized in actual output is reported for the week ended July 21, compared with the week ended July 14, from mines in 11 states. These mines produced 3,115,202 tons in the week ended July 21, about one-third the total weekly output of bituminous coal.

Per cent. of full-time output produced in week ended:

	June 30	July 7	July 14	July 21
Illinois	72.7	79.6	79.5	76.0
Indiana	69.5	73.0	73.0	69.3
Ohio	65.5	75.3	69.3	69.2
Pennsylvania	72.3	75.4	78.6	77.9
Southwest Va.	...	76.9	85.6	89.6
Eastern Ky. and Tenn.	72.8	75.0	78.4	81.0
Kan. and Missouri	74.5	85.6	78.0	78.2
Okla. and Ark.	66.1	61.6	75.7	69.2
Total reported	72.0	77.4	77.5	75.3

Week Ended	Full Capacity	Actual Output	Losses, All Causes (Net Tons)	Full Output Produced %	Full Output Lost %
July 7	2,466,413	1,882,505	583,908	76.4	23.6
July 14	3,049,299	2,332,908	716,391	76.5	23.5
July 21	3,001,108	2,213,258	787,850	73.7	26.3

The following figures showing carloads of coal originating on 13 of the principal roads of the United States (representing 54.5 per cent. of the total rail shipments in 1916) furnish an index of the rate of production, by weeks. The total number of cars loaded in the four calendar weeks of July shows an increase of 3.7 per cent. over the four weeks of June. An increase is shown in each succeeding week from the first of June to July 14, excluding the 5-day week ended July 7, with last 2 weeks of July recording successive decreases. The figures include reports from many parts of the country not covered by the preceding tables, and do not represent conditions in some fields from which operating reports are now received.

Districts	Week Ended July 14	July 21	July 28
Ala., E. Ky., and E. Tenn.	17,286	16,017	9,415
Ill., Ind. and W. Ky.	18,047	17,923	16,766
Pa., and Ohio	44,384	44,372	44,180
W. Va. and Va.			
Smokeless	10,896	10,709	10,733
High volatile	17,616	16,652	17,860
West of the Mississippi	1,708	1,704	1,803
Total	109,937	105,069	100,883

Figures for July include 13 roads.

BUSINESS OPINIONS

The Iron Age—Repeated outgivings from Washington of sweeping action intended in the Government's dealings with steel makers and the reiteration of the President's call for "one price for all" have only added to the uncertainty that is holding back all iron and steel markets. Price changes have been narrow, apart from semi-finished steel, in which offerings have been made at $10 to $15 a ton below the recent high level of $100 for billets and $105 for sheet bars. Though Government control of coal and coke output and prices is practically assured in the passing of the food bill, there is still the problem of insufficient labor to increase the coke output. The withdrawal of cars from the coke districts in view of labor scarcity there was overdone this week and spot coke advanced $3 to $4 a ton or to $13 and $14.

Dun—Further restraints upon business have been imposed by the intense heat over a wide area, and some apprehension of crop damage has resulted. The effect of the extreme temperatures has also appeared in diminished manufacturing activity, with curtailed operations at many establishments, and smaller numbers of buyers in the shopping districts have reduced the volume of retail distribution. Commercial failures this week are 247, against 271 last week, 266 the preceding week and 274 the corresponding week last year.

Bradstreet—Business, rapidly adjusting itself to war conditions, is uniformly satisfactory for a midsummer period, but ordinary civilian demand, as distinguished from Governmental wants, lacks the snap of a few months ago, and on the whole buying operations for normal purposes is streaked with more or less conservatism. Moreover, extremely hot weather has exerted a retarding effect upon sales of final distributors, while at the same time restricting outputs of manufactured articles. Nevertheless, fundamental undercurrents are favorable, optimism as to fall trade reigns, crop news on the whole is encouraging, prices for farm produce are remunerative and railway earnings are larger.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week is running ahead of shipments for the corresponding week last year. Road sales for immediate and future deliveries have been in excess of those for the same week a year ago. Fewer merchants have been in the market. A large number is expected to attend Chicago's Market Week and the Fall Style Show.

Dry Goods Economist—The attention of the retail trade throughout the country has been centered during the week upon the discount controversy which up to Wednesday morning appeared no nearer a solution. On the afternoon of Wednesday an agreement was reached between manufacturers and buyers that a conference should be held on Friday morning to discuss the various angles of the proposition.

Atlantic Seaboard

BOSTON

Pocahontas and New River unchanged. Almost no spot sales. Receipts uneven. Active buying of Pennsylvania grades at the premium asked. Nothing new in anthracite.

Bituminous—It is notable that New England, normally to very large extent a Pocahontas and New River market, is this season very little interested in spot prices at Hampton Roads. One cause is the relative scarcity of boats, the difficulty of getting them loaded, and the consequent greater dependence upon all-rail delivery, but chiefly it is because so large a tonnage was closed very early in the year on a contract basis that still compares advantageously with prices in the current market. There is no question about the very large volume of coal that is now coming by rail, supplanting much of the output usually distributed by boats along the coast. Every effort is being made to accumulate stocks in anticipation of hard traffic conditions this fall and winter.

Prices show little change from a week ago. Spot sales are made all the way from the Government basis of $5.14 to $7 f.o.b. Hampton Roads, the latter figure being a recent quotation for bunker use. Now and then a barge owner sits in his boat, buys a cargo, and then disposes of it here on the open market. Such sales will usually net $6@6.25 f.o.b. and yield a fair profit on the freight. Such cargoes are now the exception, however, for only a few of the more fastidious under present conditions will pay the extra price over the basis prevailing on Pennsylvania coals.

Another factor in the comparative shortage of Pocahontas and New River is the increased demand for slack for Western shipment. Smokeless slack is popular for use in byproduct ovens, and so long as it will command present prices along with screened coal the average will be considerably above the f.o.b. mine basis of $3 per net ton, plus 25c. commission. Pocahontas and New River can respond to this demand while most of the Central Pennsylvania grades cannot, and the result is a reduction in the tonnage of mine-run for Tidewater.

From the buyer's standpoint in this market the outlook is far from good. Interruptions have already occurred through Government requisitions of coal standing at the Hampton Roads piers, and there are certain to be others. Quite a number of barges, not able to get charters at much more than enough to tow them, are being closed elsewhere and in other trades that seem more remunerative. Operating conditions are much easier now than will be the case 60 or 90 days hence and to say there is a good deal of apprehension would be expressing it mildly. Stocks are not as large as has generally been supposed, forehanded as many of the large consumers have tried to be.

Bunker trade has had an impetus the past fortnight. The dearth of coal at the "authorized" basis, either at Baltimore or Philadelphia, has caused an increased demand at Norfolk and Newport News. Through the Government a considerable tonnage is being taken on short notice for ships of the allied nations. Then, too, there are again rumors of coastwise colliers to be taken over by the Shipping Board. If this move is made, New England will surely have its main course of supply effectually curtailed.

No $3.64 coal of any kind is now available from the Pennsylvania districts. On the other hand there is plenty to be had by paying the premium asked. The Canada market is said to be somewhat easier, shipments in that direction having moved so freely during July. It is today probably an even chance whether the next price change will be up or temporarily down. Buying has been somewhat accelerated by a realization on the part of large buyers that coal which can be shipped now will probably come through in much better volume than later.

The New Haven road has been embargoed by originating lines on account of inability to take and return cars delivered to it, and movement for the moment is confined to the B. & M. and the B. & A. Admittedly, both the latter are in position to handle 200 more cars daily through the all-rail gateways, and shippers are now exerting some pressure on their regular customers to take spot coal while it offers. Very heavy grain shipments will be coming along in the course of a month, and our New England railroads simply have not the motive power to handle all the traffic that will presently be thrown at them.

The Federal Trade Commission report on mining costs is awaited with some interest, but mostly New England buyers are disposed to look upon such pronouncements as something only academic in value.

Bituminous at wholesale f.o.b. loading ports at points designated, is quoted about as follows:

	Clearfields	Camb. and Somersets
Philadelphia	$4.94@5.75	$4.94@6.00
New York	5.24@6.10	5.24@6.25
F. o. b. mines	4.15@4.50	4.40@4.75
Alongside Boston (water coal)	8.00@8.45	8.25@8.75

Pocahontas and New River are quoted from $5.14@6.50 f.o.b. Norfolk and Newport News, Va., for spot coal, and $9@9.25 on cars Boston or Providence for inland delivery.

Anthracite—A few more "solid trainloads" have been coming into New England, but naturally the bulk of such deliveries are for inland points and are of no real benefit to ports along the coast like New Haven, Providence, Boston and Portland. These are all cities where consumption is large and it will take more than a trainload now and then to make up the heavy arrears in tonnage. Many in the Tidewater trade feel that the "solid train-loads" are taking coal that would otherwise be dumped into barges for coastwise shipment. It seems poor business to send cars on long trips to eastern Maine when there are plenty of small vessels looking for orders. The New England Coal Committee, however, feels that the anthracite situation here is well cared for. It is up to them to get some information.

At New York and Philadelphia broken, egg and stove continue in short supply. Just now chestnut, pea, and the steam sizes seem all that are available in any quantity, and rather than miss their turn for barges retail dealers are accepting anything that can be loaded.

Only scattering cargoes of "independent" coal are heard from. Most of these are arranged for long in advance and come forward in company barges.

Receipts at Tidewater are discouraging. Many dealers have had less than 50 per cent. of what tonnage they had last year at this time and there is really no ground for hope that things will improve.

NEW YORK

Heat wave and better supplies ease up the anthracite situation. Labor shortage more acute. Urgent demand for bituminous. Most spot coal going in foreign and bunker trade.

Anthracite—The excessive heat of last week caused a somewhat noticeable slowing up in the demand for anthracite. However, there was no increase in the supply of the domestic sizes in any of the markets to any appreciable extent. Practically every shipper is still well supplied with orders, and with cooler temperatures prevailing this week, it is not anticipated that there will be any further slowing up of trade.

One of the features of the domestic market is that a great territory that consumes anthracite for domestic fuel is still poorly supplied. Not only are dealers in these sections making every possible effort to secure supplies, but many municipalities and public institutions are using every method in their power to secure shipments before the cold weather sets in. New England is still clamoring for domestic coal, while there has been no lessening in the demand from Canada, and from the Northwest.

Production is about up to maximum. It appears that no matter how hard operators may try to increase their production they cannot secure in every case the coöperation of their employees. During the past week considerable tonnage has been lost due to the closing down of numerous mines by button strikes. Moreover, the labor shortage grows more acute, and further losses are feared from the drafting of many thousands of miners and laborers employed around the mines under the conscription act.

The steam sizes are in good supply, especially rice. The better grades of the steam coals appear to be taken on contract, leaving mostly the inferior and medium coals for spot demand.

Current quotations per gross ton, f.o.b., Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken	$5.00@5.75	
Egg	5.75@5.85	
Stove	6.00@6.10	
Chestnut	6.05@6.20	
Pea	4.40@4.95	$5.50@6.00
Buck	4.00@4.25	4.50@5.00
Rice	3.40@3.60	3.00@3.25
Barley	2.90@3.10	2.50@3.00

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—This week has seen a very strong spot demand for bituminous. Monday many calls were being made for immediate shipment by consumers, many of whom are so short of fuel that they may have to shut down unless they get speedy relief. Included in this class are many ice plants which have been working to maximum due to the great demand for their product brought on by last week's hot wave.

Production has not improved, and consequently supplies at New York harbor ports are extremely light. Would-be buyers find few dealers who are in position to sell them coal from supplies now on hand.

Dealers complain that they find great difficulty in buying coal at the $3 per net ton rate at the mines. Some operators are quoting prices of $4 to $5 per gross ton at the mines for coal to be used for bunker purposes only. Anticipating that they will be able to secure orders from bunker users, or for Canadian shipment, which also permits them to secure a higher price than the $3 rate, they do not care to sell coal at the low price, shipping their surplus upon contract when they cannot find bunker or Canadian buyers.

Considerable interest attaches to the announcement made from Washington this week that now that the Federal Trade Commission has made its report on the cost of producing coal, the public may expect a reduction of fifty cents or more will be made from the $3 per net ton price, and this will no doubt be responsible for the slowing down of demand from those consumers who are at present carrying stocks.

The bunker requirements at New York harbor continue very large and those dealers with supplies of bunker coals are able to secure $6.25 to $6.50 very freely for spot deliveries, which means about $7 to $7.25 per ton alongside.

While the pooling arrangement has been in effect now at all of the ports since the first of August, it is yet too early to expect satisfactory results, as there is still quite a number of shippers who have not come into the pool. Reports indicate that shippers are agreeing to the plan very generally and that the tardy ones may be reached within the next week or so.

Current quotations, per gross ton, f.o.b., Tidewater, for various grades are as follows:

	F. O. B.	Mine Price
Bunker coal	$6.25@6.50	$4.00@5.00
Commercial coal	5.25@6.25	$3.00 net

PHILADELPHIA

Anthracite demand slowed down by heat, but dealers still short. No increase in shipments. Car restrictions still hamper and this tends to cripple some dealers. Lively demand for all family sizes but steam grades show signs of weakening. Bitumious shippers discouraged over car supply. Rumors of high prices, but Government figures are generally observed. Producers screening more coal.

Anthracite—For the first time in many months it is possible to report an easing up in the offices of all shippers. The excessive heat drove coal consumers from their homes and business places and the dealers from their yards. Householders who have not stored next winter's supply forgot all about coal, and the retailers, apparently glad for any respite, neglected to nag the selling agents for a week. Of course this is only a temporary condition and the orders of local dealers still remain unfilled. Shipments into the city have shown no great increase, although a quiet feeling of confidence prevails among the dealers that the big companies will soon make good on their promises. Lately numerous "button" strikes in the region have retarded production, several thousand men being out for from one to three days at a time. However, the outlook grows more encouraging and we believe when the big companies begin to start shipments into this market there will be plenty of coal.

An encouraging feature in the local trade is the interest recently taken by one of the large shipping companies. This company is about to make a canvass of the local situation to determine how much coal the trade has on hand and how much they must have before fall. There is no doubt that all dealers will most gladly furnish this information and the feeling now seems to be that the much hoped for relief is about to arrive. When coal does come, however, it will probably be a case of taking what can be shipped, both as to sizes and classifications, and if the dealers are not too particular in this respect, they will be able to accumulate some reserve stocks. Such promises have been made before and then

failed to come to pass, but the feeling now is stronger than ever that the coal will come.

As for some time the dealers located on the Pennsylvania R.R. tracks are the greatest sufferers. Undoubtedly they have filled a smaller percentage of their spring orders than their competitors located on the Philadelphia & Reading tracks. Only about 45 per cent. of the anthracite moving to Pennsylvania R.R. points comes directly from mines on that line and as a consequence the dealers on this road are buying more premium coal than those on the P. & R. Ry. tracks; they are willingly paying $4.65 for pea coal, the trade commission's maximum price for August and on the prepared sizes they are paying as high as $5.10 for egg, $5.35 for stove and $5.45 for chestnut. When coal is bought at these prices, the dealer redoubles his efforts to procure a shipment of company coal at regular circular rates in order to reduce the average price as it would be impossible to pay these rates for their entire supply at the prevailing retail prices.

The wholesale houses realize this situation and are giving it considerable attention, in addition to redoubling their efforts to have the railroad companies modify their restrictions as to allowing additional foreign equipment to go to these dealers. The Lehigh Valley R.R. has not changed its policy and continues to allow only a limited movement of its equipment to Pennsylvania R.R. points south of Philipsburg, but even this has been the salvation of a number of dealers, who would otherwise have been entirely out of business weeks ago. The Pennsylvania R.R. dealers are in a bad way for all sizes and some of them must have liberal shipments at reasonable prices before fall or they can hardly continue in business. Some relief may result from the announcement of the new owners of the Susquehanna Coal Co., upon whom most of them depend in ordinary times for their supplies, that it is the intention of the new organization to continue to ship their product into the usual markets served by them. For a time it was feared that the bulk of the tonnage would be diverted to Western points.

The number of box cars received by local dealers is increasing and the retailers are in this way doing all they can to relieve the situation; some of them are even reporting some advantages in receiving coal in this manner, such as receiving full weight as billed, and others who were at first inclined to refuse to receive the cars at all, now state that they are not finding it so difficult to take care of them as they had expected. This is certainly a big relief to the shipping offices and has done much to save the situation.

Once more the talk of re-sizing domestic coal has come up and this brings to mind the great opportunity lost by the shippers over a year ago. The dealers practically to a man would welcome such a move, but after the last fiasco many operators have lost faith in each other and it will require a strong leader to bring about such a radical change now. However, conditions at this time are different from last year and there are some who believe that the number of domestic sizes will be reduced from four to two.

The market for broken continues so strong that $6.25 at mines is cheerfully paid for any spot coal. Egg coal is also in good demand; it is often substituted for the much desired broken, but the demand from the New England states shows no falling off. Suburban dealers here, who most urgently demand this size, complain because their requisitions remain unfilled. Stove, too, loses none of its strength, nor is it likely to until an immense tonnage is consigned here. There is little or none in the dealers yards and they report thousands of tons to deliver. Chestnut continues in its position as the weakest family size; the Reading Ry. tracks have more yards with this on hand than all the other sizes combined and some dealers are now actually holding their orders believing they can buy all they need of it, while others are anxious to store and are putting in as much as possible. The Philadelphia trade as a whole does not seem to realize that the demand from outside points is very heavy and that it is bringing top prices there.

Pea coal does not improve. The fact that the big companies agreed to supply the public schools and the water department with their requirements means less coal at circular prices for the retailers. For this reason alone it seems wisdom to some dealers to store all the chestnut they can procure to use as a substitute for pea next winter when the production is likely to be less and the demand correspondingly greater.

The steam sizes are all beginning to show weakness. Parties under contract are mostly taking their full requirements, although there are instances where even they have requested shippers to ease up a little. However, many contract customers are storing the coal as they figure on a shortage in a few months and want to be prepared. Spot coal is not bringing a higher price than contract. Barley and boiler are the least active and there is likely to be quite a tonnage of these sizes in storage by next fall, although the amount of buckwheat and rice being dumped in the storage yards of the larger companies has also increased appreciably of late.

As was forecasted when the companies issued their August circulars, the individual shippers have fallen in line with the usual 10c. increase. But there is an exception or two, where they allowed the July prices to stand. These were among those shippers who from the beginning have been receiving the maximum price for coal.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$5.10	$6.25	Buck	$2.90	3.30
Egg	4.35	5.65	Rice	2.40	3.40
Stove	4.60	5.90	Boiler	2.20	3.30
Nut	4.70	5.95	Barley	1.90	2.15
Pea	3.30	4.20			

Bituminous—Producing interests are somewhat discouraged. The car supply does not improve in the least and the complaint is general that the mines are cut down in operating time on this account. More than one company have reported that their plants did not make full time on a single day out of the last six on this account. The feeling is growing stronger all the time that it is the duty of the Government to take drastic steps to compel the railroads to expedite movement and increase the car supply. In this territory alone the shippers point out the wastage of transportation due to the many and large special passenger excursions to various seaside resorts which are unnecessary at this time if the country is to reach the maximum of its productiveness.

The larger and more important houses are still maintaining the agreed prices of $3 and $3.50 per net ton for mine-run and lump coal respectively and they admit that the business at these prices would be profitable were they able to secure the needed cars. Other interests it is reported are taking higher prices than the above and the report seems now to have reached beyond the rumor stage, although the business is being done very quietly. As a matter of fact producing companies here say it is not unusual for them to receive inquiries from brokerage houses in other parts of the country offering even more than the Government maximum for coal. Many of these inquiries come from the New England territory and it is reported here that quite a little business is now being done in that section at prices better than the ones agreed upon by the more important operators. However, this condition is not general and so far as this market is concerned, is far from it.

Most all the coal produced by local operators continues to be applied on contract business, and it is also of interest to note that where contracts were made a few months ago at better than the $3.50 price, the shipments have been particularly good. Inasmuch also as higher prices are allowed for lump coal more coal than usual is being screened, which also relieves the shortage which had existed for some time in the slack coal market. Heavy shipments of coal continue to be made to Canada and to tide for foreign bunkering trade. The railroads have also confiscated quite heavily of shipments in transit.

BALTIMORE

Fuel in easier supply with demand comparatively light. Low priced spot coal a little easier. Jobbers still confused. Hard-coal complaints.

Bituminous—The demand for soft coal here is apparently a little lighter, and this fact, combined with a better movement of coal over the Baltimore & Ohio and Western Maryland railroads makes conditions easier. This applies largely to contract coal, and while there is possibly a little more low-priced coal at spot sales, the comparatively light call for coal is probably largely due to the fact that consumers have recently found it very hard to get the so-called Government maximum fuel.

That middlemen here are still confused is shown by the fact that a number are keeping up correspondence with officials in Washington in an effort to get advice that will hold them within the Government agreement and at the same time protect their own business. Most of those complaining that they are being asked higher prices by mines for better grade coals are requested in reply for names, etc. Few are giving such facts, as they feel that they would be squeezed out of fuel by mines if they were known as complainants.

The Tidewater pooling plan is still having its troubles in regard to local delivery. Some consumers are finding it hard to adjust their boilers to changing grades of coal under the general plan.

Anthracite—Supplies of anthracite are much better here, despite the talk of generally poor service on the Pennsylvania. Deliveries of some long delayed shipments were recorded, and local coal men were able to catch up on some of their back orders. Most of the coal companies are still a long way back on their business, but are hoping that the better movement will be maintained throughout August. Not a few companies, however, will have to face considerable losses on big orders placed at the spring schedule, and for which they have been unable to get coal up to the present time. All profits will certainly be eliminated if this coal has to be delivered at September prices. The trade is also complaining that the preparation is poor. An unusual proportion of slate is reported in the coal from a number of connections.

HAMPTON ROADS

Members of Tidewater Coal Exchange say exchange is unsatisfactory. All domestic business strictly confined to contracts. Export prices good with fair demand.

Several members of the Tidewater Coal Exchange have expressed themselves in no uncertain terms as being disgusted with the whole proposition. They say it is next to impossible to get any information in regard to their business, and such information as they do get is so old by the time it is received that it is of no value to anyone. Members of the pool are wearing a harrassed look these hot days and have the sympathy of their brethren who are lucky enough not to be mixed up in the proposition.

Domestic business is principally on contract. In some instances the contract price is more than the limit of $3 f.o.b. mines per net ton. Shippers have no inducement to sell coal in the open market and seem to be confining their deliveries to their contract customers. Foreign demand is good, however, and prices are firm on the basis of $7 per gross ton f.o.b. steamer. A good deal of the surplus tonnage is taken by this business. The market for bunker coal is brisk around $7.50 per gross ton plus 15c. trimming

The pier of the Virginian Ry. at Sewalls Point is unable to handle the rush of business at that Terminal and delay seems to be the rule there rather than the exception. Some relief is expected on the completion of the new car dumper.

The Navy Department is taking increasing quantities of coal and shippers are continually on the jump to keep pace with the demands.

The Italian steamer Attualita was sold at auction here recently bringing $1,715,700.

Dumpings for the month of July were in gross tons:

Norfolk & Western Ry.	541,290
Virginian Ry.	383,666
Chesapeake & Ohio Ry.	408,454
Total	1,333,410

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	July 14	July 21	July 28	Aug. 4
Nor. & West.	117,442	141,310	144,743	121,170
Ches. & Ohio.	81,769	90,993	104,865	81,188
Virginian	82,769	96,385	84,236	.....
Total	281,980	328,688	333,844	.....

Ocean Shipping

COASTWISE FREIGHTS

Rates are nominally at $2.50, Hampton Roads to Boston, although charters have been made at 25c. less. Barge owners are really at a loss to get orders for coal, towing charges being so high. Several bottoms have been attracted by rates on lumber and ties from Southern ports.

On Long Island Sound freights are still at $1.50 to Providence. $1.90 was paid this week to Boston.

OCEAN FREIGHTS

There has been very little change in the freight market since our last report, and steamers are still very difficult to obtain except to certain destinations such as Rio, West Indies and the Windward, for which ports we still have a number of available steamers. We cannot state what effect upon

the freight market the recent developments at Washington will produce, and this makes it very difficult for us to quote with any degree of certainty. A number of boats were closed for export coal during the past week, but none of any importance reported.

We would quote freight rates on coal by steamer as follows:

Europe	July 30	Aug. 6
Marseilles	$100.00 about	$100.00 about
Spain (Atlantic)*	42.00 about	42.00 about
Spain(Med't'n)*.	44.40 about	44.40 about

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

South America		
Montevideo	$33.60@36.00	$33.60@36.00
Buenos Aires	33.60@36.00	33.60@36.00
Rosario	36.00@38.40	36.00@38.40
Rio Janeiro	[2]32.50 about	[2]32.00 about
Santos	[2]36.00 about	[2]36.00 about
Chile(good port)	15.50@17.50	16.00@18.00
West Indies		
Havana	5.25 about	5.00@5.25
Cardenas, Sagua	6.75 about	6.75 about
Cienfuegos	7.25 about	7.25@7.75
Port au Spain	10.25@10.50	10.00@10.50
St. Lucia	10.25@10.50	10.00@10.50
St. Thomas	8.50@ 9.00	8.50@ 9.00
Barbados	10.25@10.50	10.00@10.50
Kingston	7.50 about	7.50 about
Curacao[1]	8.75@ 9.25	8.75@9.25
Santiago	7.25 about	7.50 about
Guantanamo	7.25 about	7.50 about
Bermuda	6.00@6.50	7.00 about
Mexico		
Vera Cruz	9.00@10.00	9.00@10.00
Tampico	9.00@10.00	9.00@10.00

* Spanish dues for account of cargo. [1] And p.c.
[2] Or other good Spanish port. [3] Net.
W. W. Battie & Co.'s Coal Trade Freight Report.

Lake Markets

PITTSBURGH

Very little coal in open market, violation of agreement being intimated. Meeting of operators called in hope of averting Government regulation.

The coal market has been rapidly becoming a farce, in that there has been less and less coal available in the open market at the agreed maximum prices. Evidently the great bulk of the coal produced is being moved on some other basis, but details as to this are unobtainable. The common statement is that a great deal is being shipped on contracts existing prior to the agreement, and which the agreement did not rescind. This does not explain, however, why there is less coal now than in the first fortnight of July. There are many intimations that coal is being sold at above the agreed price but no one is willing to make a definite statement. It is said, however, that the Pittsburgh district has come nearer to following the agreement than any other district.

A meeting of coal operators is scheduled to be held Friday and Saturday of this week at Deer Park, Md., the stated purpose being to take steps that will avoid the necessity of the Administration fixing coal prices under the authority given it by the Food Control bill which it is expected will have been approved by the time of the meeting. The view is commonly expressed, however, that it will be impossible to avoid rigid control by the Government, seeing that the working of the voluntary agreement has proved quite unsatisfactory.

Production is at about the same rate as formerly, there being a moderate but not a satisfactory car supply.

We quote spot coal, according to the agreement, at $3@3.25 for slack and mine-run and $3.50@3.75 for screened, per net ton at mine, Pittsburgh district, but would state that very little coal can be found at these prices. Export prices for Canada chiefly, are about 25c. per ton higher.

BUFFALO

Prices coming down to the $3 level. Canada not paying much excess. Coal rather scarce. Anthracite in as much demand as ever. Movement good.

Bituminous—It appears more and more every week that the specified mine prices of $3 for slack and mine-run and $3.50 for lump are prevailing. There are still quite a few shippers who claim to pay no attention to it, but they generally sell their coal so that they cannot be reached by any charge of violating the order. There has been no question as to the adoption of the prescribed 25c. a ton profit to the jobbers; they claim to have accepted it without exception or reserve. There are members of the trade who advise the general adoption of the regulation price also as otherwise the Government will be tempted to order a further reduction.

One state of things which vexes the bituminous trade is that contract prices are now quite often higher than the going prices; this makes the consumers uneasy, for they claim that they ought to be in line to obtain the benefit of the reduced prices. Shippers, however, are filling contracts to the limit and paying no attention to the reduction.

Coal is not very plentiful. The lack of cars is as bad as ever and the fear is that the fall will develop a shortage such as has not been known before. On this account some of the shippers are urging consumers to stock up as much as they can now, in order to be ready for the shortage. This is hard to do, unless an extra price is paid, which may turn out to be risky.

It is now thought best to make all bituminous quotations in accordance with the regular Government price, the lower figures representing slack and the higher, sizes. All real variations are now on account of difference of freight rates, except where the shipper takes chances. The regulation does not appear to affect cannel, which competes with anthracite and some times sells above it:

Slack and lump, Pittsburgh Rate	$4.65@5.15
Slack and lump, Bessemer Rate	4.55@5.05
Slack and lump, Allegheny Valley Rate	4.50@5.00
Cambria Co. Smithing, Allegheny Valley Rate	5.15@5.65
Pennsylvania Smokeless, Allegheny Valley Rate	5.20@5.70
Cannel, Allegheny Valley Rate	6.75@7.25

No difference is made on account of the region the coal comes from or the supposed variation in quality of the coal. All prices are per net ton, f.o.b. Buffalo.

Anthracite—The trade is without change. All consumers who are not liberally supplied continue to clamor for it, as though they were without any and in much immediate need of it. This state of things is expected to continue indefinitely, as the idea is that a scarcity is due in the near future. The hot weather has made no difference with the local situation.

Shipments by Lake continue heavy. The custom-house reports now fail to give any details of the Canadian trade, but merely state that they were Canadian. The amount for these ports for the week was 8800 tons, with 29,475 tons for Chicago, 29,850 tons for Milwaukee, 11,000 tons for Sheboygan, 3000 tons for Green Bay, 66,600 tons for Duluth and Superior, 3500 tons for Hancock and 3000 tons for Green Bay, a total of 154,875 tons. Freight rates are unchanged.

The July shipments were 475,725 tons, as against 357,495 tons for July last season. For the present season to August the amount is 1,583,570 tons as against 1,226,-101 tons to the same date last season.

DETROIT

Many steam coal users delay placing orders in expectation of lower prices. Trade in anthracite is sluggish. Shipments by Lake routes improve.

Bituminous—Efforts of jobbers and wholesalers to interest certain of the consumers of steam coal in buying for future needs are meeting with very little success. Placing orders for only sufficient stock to meet day-to-day requirements, these users of steam coal are awaiting the time predicted by Government representatives, when they will be able to purchase coal at a price below the amounts now accepted by bitumiuous operators as the maximum.

Indications of a tightening of car supply, in part the result of increasing demands of the Government for the transportation of munitions, merchandise and food supplies, and the movement of military forces, have not yet stimulated the backward buyers to action, though they are being warned that even should the lower prices materialize—which is doubted by the jobbers—the cheaper coal is likely to be of little use to them if they are unable to get it moved from the mines to their plants. There is, however, a fair volume of buying of steam coal, considering that the present is the season when manufacturing plants in many lines slacken activity. Practically no coal remains unsold on tracks.

Household buyers of domestic sizes are not an active factor in the market just now. With excessive heat, vacations and matters pertaining to the selective draft demanding attention, the matter of putting in coal for next winter's use appears to have become a consideration of rather secondary importance.

Anthracite—Very little anthracite is reported coming to Detroit, but jobbers say interest among retailers is not easily aroused to the buying point as there is an impression that should prices be reduced, those who had stocked up, might have trouble finding buyers, who would accept the coal at prices showing a profit to the dealer.

Lake Trade—Gradual improvement in volume of the movement of coal over Lake routes is reported. Stock is still coming from the mines in insufficient amount to load all vessels offered promptly. Efforts are being made to increase shipments in August.

CLEVELAND

Car supply shows no improvement. Serious situation in lake shipments. July shipments show decided decrease compared with last year.

There has been no improvement in the car supply at mines in the Eastern Ohio district the past few days and in consequence the tonnage produced has not averaged more than 40 per cent. of the capacity of the mines. The situation has become so serious that members of the Lake Erie Bituminous Coal Exchange have arranged to hold daily meetings with the officials of Ohio coal roads hoping thereby to impress on the railroad men the importance of increasing the car supply in order that Lake coal may come forward in larger quantities. The exchange has worked out an arrangement with vessel owners whereby boats will be furnished whenever there is enough coal at the docks to give them a cargo, but on account of the poor car supply it has been impossible to accumulate enough coal to load more than one-half of the vessels available.

Large local consumers have also been hard pressed the past week to secure enough coal to keep them running and have been combing the market for every available car to be found. The city of Cleveland will receive bids on Aug. 17 on 15,000 tons mine-run coal to be furnished the garbage disposal plant for one year beginning Sept. 1, 1917.

Commissioner Fred C. Baird, of the Lake Erie Bituminous Coal Exchange, reports 3,590,147 tons of cargo, and 138,872 tons of bunker, making a total of 3,729,019 tons bituminous loaded at lake Erie ports during the month of July. These figures show a decrease of 518,124 tons as compared with July, 1916, due entirely to the shortage of cars at the mines.

Shipments of coal via Lake to the docks at Duluth and Superior during the present season show a loss in bituminous and a gain in anthracite as compared to the same period last year. To date this season a total of 2,829,188 tons of bituminous have been shipped against 3,710,456 tons a year ago. Shipments of anthracite this season total 710,171 tons against 547,039 tons last season.

Hard coal shipments out of Buffalo to the upper Lakes during the month of July showed a marked increase over the corresponding month a year ago, and also exceeded those of the preceding months this year. The shipments totaled 564,925 tons as against 357,495 tons in July, 1916.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	$4.40	$3.90	$3.90
Cambridge	4.40	3.90	3.90
Middle Dist.	4.20	3.90	3.90
Hocking	4.40	3.90	3.90
Youghiogheny	4.65	4.15	4.15
Pittsburgh	4.65	4.15	4.15
Pocahontas		4.85	...

COLUMBUS

More activity has developed both in domestic and steam lines. The Lake business is still the big factor in the trade. Clearing house is fixing retail prices in many Ohio cities.

With retail prices fixed in Columbus and other Ohio cities, there is more activity shown in the domestic trade. Dealers are now in the market as consumers are making inquiries and placing orders. The uncertainty in retail trade is gradually passing away and with prices fixed, good buying can be expected during the latter part of the present month.

The Ohio Clearing House fixed the following prices for Ohio mined coal: Hocking lump, forked, $5.50; mine-run, $4.95. While the clearing house did not fix prices for West Virginia coal still it is intended that Ohio coal, taking into consideration the they will come down to the same levels as freight differential. Thus Pocahontas lump will sell between $6.50 and $7 and Splints from $6 to $6.25. There is a good demand for Pocahontas and stocks are extremely scarce. Splints and both white and red ash are also in good demand. Anthracite is strong and prices are above the $10 mark.

Steam business is active and there is a distinct movement on the part of users to

stock up. This is especially noticeable among larger users, many of whom have surplus stocks for a month or six weeks ahead. The smaller consumers also are joining in the movement. Lake shippers are trying to have this stopped in order to give as large a tonnage as possible for Lake shipment. Steam contracting is not heavy as a large part of the tonnage is being bought from the open market.

The Lake trade is attractig the most attention of any department of the business. With a conference of lake shippers last week at Cleveland, renewed activity has been noted in the trade. Reports show a glaring shortage at the head of the Lakes and every effort will be made to overcome this. The movement off the docks is good and no congestion is reported. Operators, railroad officials and vessel men are joining in the campaign to increase the Lake tonnage. Reports from the Hocking Valley and Toledo & Ohio Central docks for the week ending August showed a large tonnage loaded.

Production has been rather active, although some shortage in car supply has appeared. This is not sufficient, however, to curtail the output to any appreciable extent.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$3.50	$3.50	.....
Inch and a quarter	3.50	3.50	$3.50
Three-quarter inch	3.00	3.00	3.00
Nut	3.00	3.00	3.00
Egg	3.00	3.00	.....
Mine run	3.00	3.00	3.00
Nut, pea and slack	3.00	3.00	3.00
Coarse slack	3.00	3.00	3.00

CINCINNATI

Steam business brisk, with demand strong. Domestic consumers still waiting for lower prices locally. Northern markets taking large quantities of coal.

Strength characterizes all departments of the coal market, although the steam business is better locally than the domestic sizes, due to the fact that demand is more insistent. Domestic consumers are generally holding off buying their winter requirements, believing that some means will be found of lowering prices, although dealers are endeavoring to dissipate this impression.

However, there is little effect noted on the general market, as the movement to the North and Northwest, via the Lakes and by rail, continues very heavy, and bids fair to break all records. An improved car supply has enabled operators to keep things going at a more active rate than for some time, and they are making the best of it. Many large concerns are not actively in the market, their capacity being sold up entirely, and they are concerning themselves chiefly with getting coal forward to cover contracts which were made at advantageous figures. On the other hand, prices for free coal are maintained firmly and this is responsible for the urgency of large steam consumers to secure fuel, as they realize fully that conditions will not improve as time goes on.

LOUISVILLE

Advancing season increases demand, especially for domestic sizes, with Lake market active. Labor situation uncertain and production slowing down somewhat.

An increased activity is being shown in this market, especially where domestic sizes are concerned. Retailers appear to have decided to wait no longer and are stocking and there are more inquiries from inland points for car-lot shipments than can be taken care of. The retail trade itself complains that the householders are still holding off in buying. Shipments to the Lake region are increasing, with the advancing season. Demand for steam coal continues brisk. The car supply is causing little comment, except that a poor supply on the Illinois Central is noted in western Kentucky.

Labor in eastern Kentucky put in a light week on account of the state primary election which furnished an excuse for a holiday. There have been no developments in the eastern Kentucky-Tennessee labor situation except that the operators have determined to oppose the unions, while, barring a few cases of disorder in western Kentucky, the strike there continues to have little effect on the output. Kentucky operators hear that President Wilson has come around to the view that the prevailing "Government" prices are about right. Prices are unchanged.

BIRMINGHAM, ALA.

Market continues quiet with light demand in spot trade. Quotations show no change and hold close to maximum figures. Car supply not so good as last week. Labor conditions very unstable.

With apparent indifference being shown by the consuming interests as a whole and little solicitation evidenced on the part of the agencies, activities are confined to scattering inquiries to cover current consumption. Contract consumers are urging the shipment of full quotas and the movement of coal is heavy considering the detrimental conditions affecting production.

Maximum quotations are being closely adhered to, prices ranging as follows per net ton mines: Big Seam, $2.75@$3; Carbon Hill, Corona and Pratt, $3.25@$3.50; Black Creek and Cahaba, $3.75@$4. Pratt coal is firm on a $3.50 basis and Cahaba brought in most instances $4 per ton. The surplus supply is small and confined practically to small operations dependent on spot business. There has been no enforced idleness at any of the mines due to lack of orders.

Some complaints were registered during the past week on account of a shortage of equipment, mines on the Louisville & Nashville, Southern and 'Frisco, losing time in some instances on this account. The principal matter of concern now is how seriously the contemplated strike of the United Mine Workers will cripple the output of the district. The local officials have issued an ultimatum calling for a strike on Aug. 20 if negotiations are not entered into with the union by the mine owners by the 15th inst. The Coal Operators' Association, which embraces in its membership practically all operators of consequence, has flatly declined to take any recognition of the demands set forth by the union, the principal one of which is "recognition." Wage schedules now in effect are practically the same as the scale adopted by the convention, and this feature is touched upon lightly in the bill of complaint against the coal men.

Coke

CONNELLSVILLE

Car supplies further curtailed. Labor performance further reduced. Prices continue advancing. Government control in prospect.

Car supplies last week averaged between 50 and 55 per cent. of the ratings, when supplies of 65 or 70 per cent. are required to satisfy fully the requirements of blast furnaces depending on the region. A further advance in the spot market resulted late last week and this week the market has continued to stiffen, until today the market is $12.50 to $13.50, with predictions that $14 or higher will be reached before the end of the week. Monday opened with a 60 per cent. car supply, supplies being less thereafter. Foundry coke is not in heavy demand, but easily commands $1 a ton over furnace.

To the difficulty as to car supplies has been added still more difficulty as to labor. Possibly there are enough men but they will not work full time and the hot weather of the past fortnight has cut down their performance still more.

While coke operators in general do not admit the feasibility or desirability of coke prices being fixed by the Government the balance of probability is that the regulation will take place as the Food Control bill, to become a law this week, makes full provision for this to be done, either by the naming of prices at which coke is to be sold or by the Government buying all coke and selling it to consumers. According to the terms of the bill contracts are not to be abrogated.

The spot market is quotable at $12.50@13.50 for furnace and at $13.50@14.50 for foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended July 28 at 367,355 tons, an increase of 5207 tons, and shipments at 370,618 tons, a decrease of 3424 tons.

Buffalo—Prices are stronger, shippers report that the scarcity of cars and the lack of men are accountable for the upward tendency. The moving of 10,000,000 tons of iron ore by Lake in July may have had something to do with the firmness, as it was a record-breaking amount. Quotations per net ton f.o.b. Buffalo are $15.50 for 72-hr. Connellsville foundry, $14 for 48-hr. furnace and $12 for low grades and stock coke.

Birmingham, Ala.—There are no evidences of any decline in coke prices in this district and the demand continues strong. Inquiry from Pacific Coast points is good but is not needed to take care of local production, which has suffered curtailment in line with the decline in output of coal, due to labor conditions. Spot foundry easily brings $16.50 for the high-grade product. Contract figures have not changed materially, ranging from $11.50 to $14 per net ton ovens. Furnace coke is hard to get and is reported around $6 to $8 per net ton ovens.

GENERAL REVIEW

Industrial demands continue strong. Domestic demands less active due to newspaper agitation for lower prices. Labor and car-supply shortage growing.

There has been no appreciable falling off in business during the past week, except that retailers report less active buying on the part of householders. This is more noticeable on Indiana and Illinois coals than any other, and is due altogether to the continued agitation in the daily newspapers for lower prices, and the fact that a majority of the ultimate consumers, who have put off their buying believe the State Council of Defense would and had the power to lower the price of coal produced in the two states—Indiana and Illinois. Industrial concerns, however, have made heavy purchases, and the shippers are as far in arrears on shipments as they were some weeks ago.

The car supply has shown no improvement, and in Indiana and Illinois the supply was very low the last half of the week. This, no doubt, has been due to action taken by the railroads to embargo Chicago shipments for the duration of the switchmen's strike which ended last Monday night. Cars which ordinarily would have been returned to the mines by the middle of the week were held up and it is expected that the congestion will not be cleared prior to the latter part of the coming week. Eastern fields report car supply has averaged from 60 per cent. to 75 per cent., Kentucky about 60 per cent., and Indiana and Illinois average not more than 55 per cent.

All mining sections report more or less shortage of labor, and a serious loss of production on account of the inefficiency of the men. Under the present wage scale considerably less work is necessary to make a living, and as a result the working hours of a great many of the men have been reduced accordingly. This seriously interferes with operations and hinders production.

Lake shipments to points in western Lake Michigan and Lake Superior have shown quite an improvement the past week over previous shipments for the same period, and dock companies report that the railroads are giving good service in moving out coal. The supply of anthracite is still very short and it is not expected that there will be sufficient on hand at the close of navigation to take care of the winter demands. Bituminous receipts are gaining slightly, and loadings at Lake Erie ports have shown an improvement.

CHICAGO

Illinois and Indiana mines report poor car supply. Industrial buying exceptionally heavy. Receipts very light. Retailers complain of light demand due to expected decrease in price on Indiana and Illinois coals.

The mines in the Indiana and Illinois fields report a very poor and unsatisfactory car supply the past week, the mines averaging less than four days of work time. Buying continues as strong as any time heretofore, industrial concerns making up for the falling off of domestic sales. Retailers in the City of Chicago have their yards fairly well stocked with Indiana and Illinois coals, but report very little buying due to expected reductions by householders. The agitation by the newspapers has convinced a great many consumers that the price would be lowered. This has had little effect on anthracite sales due to the fact that none of the retailers have succeeded in securing enough of this coal to take care of business already booked. Boat arrivals containing anthracite amounted to only 7000 tons the past week, and rail arrivals were almost nil.

The Franklin County mines are three to four weeks behind on orders. Bookings the past week were light compared to bookings for the same period earlier in the month, but considerable business was received from the Northwest, the Dakotas, western Nebraska, the Gulf Coast of Texas, and shipments made to territory as far away as Montana. The tonnage produced during July amounted to about 1,040,000 tons. This is an increase of 400,000 tons over the same month last year. There has been no change in prices, and car and labor supply are worse than usual—percentage of time worked averaging about 55 per cent.

In Williamson County the running time has been about the same as in Franklin County. Maximum prices have governed, and the same is true of Saline County. However, no free coal has been available in the latter field due to the fact that most of the coal is sold on contract to the railroads.

The shortage of cars in the southern Illinois fields have helped the Springfield district mines to secure and maintain a

slight increase in price over preceding weeks. Domestic sizes are up 25c. to 50c. Car supply has averaged a little better than 60 per cent.

In Fulton and Peoria Counties the demand for steam coals has been unusually brisk. A slight falling off in domestic business is reported, but prices are firm and the mines are two to three weeks behind in filling orders. The car supply has not been better than 65 per cent.

Indiana mines are working three to four days, loss due to shortage of cars. Many petty strikes are reported also, and in some sections the miners are very restless. There has been but little change in prices. Steam coals are in better demand and Indiana markets are absorbing most of the production.

Smokeless coal continues very scarce in the Chicago market. Embargoes interfere to some extent to movement in this direction and the Lake trade is securing the bulk of the tonnage that is not moving East. Chicago retailers report a serious shortage of Pocahontas and later expect to substitute Western coal.

There is very little Hocking and Kanawha coals arriving in the Chicago markets. Embargoes are restricting the movement, the railroads confining their equipment to territory east of Chicago.

Eastern Kentucky shipments have been very light while demand has been heavier than anytime this year. Dealers are experiencing trouble in getting their early orders filled, car shortage and embargoes are preventing shipments. Maximum prices govern.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Springfield	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carterville
Domestic lump	$3.25@3.50	$3.25@3.50	$3.25@3.50	$3.00@3.25	$3.50
Steam lump	3.00@3.25	3.00@3.25	3.00	2.75@3.00	3.25@3.50
Egg	3.25@3.50	3.25@3.50	3.25@3.50	3.00@3.25	3.50
Nut	3.25@3.50	3.25@3.50	3.25@3.50	3.00@3.25	3.50
Mine-run	2.50@2.75	2.50@2.75	2.75	2.50@2.75	2.50@2.75
Screenings	2.25@2.75	2.25@2.50	2.25@2.75	2.25@2.50	2.50@2.75

	Williamson and Franklin Cos.	Saline and Harrisburg	Poca. and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump	$3.50	$3.50	$3.75	$3.75	$3.50@3.75
Egg	3.50	3.50	3.75	3.75	3.50@3.75
Nut	3.50	3.50	.....	.....	3.50@3.75
No. 1 nut	3.50	3.50	.....	.....	.....
No. 2 nut	3.50	3.50	.....	.....	.....
No. 3 nut	3.50	....	.....	.....	.....
No. 1 washed	3.50	....	.....	.....	.....
No. 2 washed	3.50	....	.....	.....	.....
Mine-run	2.75	2.75	3.25	3.25	3.25
Screenings	2.75	2.75	3.25	3.25	3.25

Hocking Lump $3.75 Splint Lump $3.75

La Salle, Grundy, Will and Bureau Counties:

Lump, Egg, No. 1 Nut	$3.25@3.50
Washed Nut	3.50
Screenings	2.50@2.75
Mine-run	2.75

ST. LOUIS

Domestic business quiet and steam trade unusually dull. Public waiting for Government action on prices. No anthracite or smokeless receipts. Conditions generally unsatisfactory.

A continued dullness on domestic coals has almost eliminated the movement of Williamson and Franklin County coal into this market. The retail price of $5.75 to $6 is entirely too high in the opinion of the public, and they are transferring their orders to the Mt. Olive grade at $4.50 delivered. There is much resentment against the high grade operators in the Illinois field on account of the prices asked, particularly since there has been rumors of unbilled coal at some of the mines in the past few weeks which would indicate that the mines are not behind in their orders.

Sections of the country that in the past have always used high grade coal are now buying Mt. Olive and Standard grades. Even the steam business on Williamson and Franklin County is lagging, and shipments of both Standard mine-run and screenings are being made to the south to places that it never moved before. The difference in price is so great between Standard and Williamson and Franklin County that the steam user is ahead by buying the inferior coal.

In the high grade field the car shortage is very acute this week, and the mines are not getting more than a day a week on each road except the Burlington.

There has been unbilled coal at the mines the past week in the high grade field of all sizes from No. 2 washed up, and at times there has also been considerable at East St. Louis. It is claimed that this was occasioned by the fact that there was a switchmen's strike on at Chicago, which prevented coal moving in.

In the Mt. Olive field the price of $2.25 at the mine still prevails for St. Louis regular trade on domestic sizes, and these mines are two or three weeks behind on shipments. Dealers that in the past have used two cars a week of Mt. Olive are now receiving orders for two cars a day. Everything shipped from this field is oversold. A big railroad tonnage is still moving out, and cars are extremely scarce.

On the Litchfield & Madison, a short-line road that moves its loads to St. Louis the day they are shipped 450 of the 1100 cars owned by this company are on the bad order track. A year ago car repairers were receiving $2.25 a day, but the company is offering $4 a day now, and cannot get men. The same condition exists on the Troy & Eastern, suburban lines and practically all of the trunk lines.

In the Standard field the market weakened this week on everything. Screenings went down to $1.85 and 2-in. lump to $2.10. In spite of this, there was a fairly good domestic demand for this coal and considerable of it moved to Chicago after the switchmen's strike was called off. The Chicago strike was probably the cause of the break.

An unusually large tonnage in this field is still moving on railroad contracts. Car shortage is bad, and there is considerable resentment among the Illinois Central operators who claim that the company is giving mines that produce railroad coal full time and mines that produce commercial coal one and one-half days a week; as a result high prices are being maintained to consumers of commercial coal along the Illinois Central line, and this will likely result in measures being taken to compel an equal distribution of cars.

The past week saw very little receipts of anthracite or smokeless coal, and there was nothing at all from Arkansas. The domestic demand in a general way is quiet, with the following domestic prices: Anthracite chestnut, $11; egg and stove, $10.75; West Virginia smokeless, $9.50; Arkansas smokeless, $9; Arkansas anthracite, $9. Williamson and Franklin County, $5.75; Mt. Olive, $4.50; Standard, $4.25; by-product coke, $12.25; gas house coke, $11.

The wholesale market per net ton f.o.b. mines is about:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump	$3.25@3.50	$2.50@3.00	$2.50@3.00
3x6-in. egg	3.25@3.50	2.50@3.00	2.50@3.00
2x3-in. nut	3.25@3.50	2.50@3.00	2.50@3.00
No. 2 nut	3.25@3.50	.....	.....
No. 3 nut	3.00@3.25	.....	.....
No. 4 nut	3.00	.....	.....
No. 5 nut	2.50	.....	.....
2-in. screen	.....	2.00@2.25	1.80@1.90
2-in. lump	.....	.....	2.10@2.25
3-in. lump	.....	2.25@3.00	.....
Steam egg	3.25	2.25	2.10@2.25
Mine run	2.50@2.75	2.25	2.00
Washed			
No. 1	3.25@3.50	.....	.....
No. 2	3.25@3.50	.....	.....
No. 3	3.00@3.25	.....	.....
No. 4	3.00	.....	.....
No. 5	2.50	.....	.....

Rate on Williamson & Franklin County is 87½c.; other fields is 72½c.

MILWAUKEE

Anthracite advanced 10c. and Pocahontas 25c. per ton. Soft coal 50c. lower. Growing fear of an inadequate winter supply.

The August coal schedule establishes an advance of 10c. per ton on anthracite, 25c. on Pocahontas and 25c. on coke. Soft coal is marked down 50c. Ruling retail prices are: Anthracite egg and stove, $9.25; nut, $9.50; pea, $8.30; buckwheat, $7.70. Pocahontas screened sells at $9.75, mine-run at $8.50, and soft lump at $8. Pittsburgh and Youghiogheny screened, for steam purposes, is held at $7.25, pile-run at $7, and screenings at $6.75. Coke sells at $9.50. This does not include a charge of 50c. per ton for putting coal in bins. The wholesale price, f.o.b. cars or wagons is $1 less than the retail scale.

Many manufacturers are unwilling to make contracts at present prices, because of the general belief that the Federal Government will be able to bring about a reduction.

Milwaukee's coal supply thus far this season is 25 per cent. below the normal, but leading dealers are of the opinion that this condition will improve before the close of navigation. Others predict a famine in anthracite, however, and there is a growing feeling of nervousness over the outlook.

Gov. E. L. Philipp has requested the governors of Minnesota, North Dakota and South Dakota to join him in a conference looking to a solution of the fuel problem. A date has not been set, but the conference will probably be held at Madison within the next fortnight. Governor Philipp says he is not so much interested in adjusting prices as he is in securing adequate supplies. Dealers have informed the governor that they are afraid to invest heavily in coal, with the prospect that the Government may lower prices. United States Senator Paul O. Husting looked into the coal situation while in the city this week. He believes something will have to be done to facilitate the movement of coal if a fuel famine is to be averted.

The State Council of Defence is taking a coal census and expects in a short time to have accurate figures as to stocks of coal at various points in the state, and the amount that will be necessary to insure ample supplies for the coming winter.

The State Board of Control, on Aug. 2, opened bids of 25 coal companies on supplying 30,000 tons of bituminous coal for the various state institutions. The average price at which soft coal was offered was $2.75 f.o.b. the mine, as against 95c. and $1 paid a year ago. The American Coal and Supply Co., of Chicago, secured the contract at $2.30 per ton f.o.b. the mine on the Carterville district, Franklin County, Illinois, coal which brought 95c. in 1916.

The city of Wauwatosa is planning to purchase coal on the coöperative plan. Mayor Hans Koenig has appealed to President Underwood of the Erie Ry. to assist the city in obtaining fuel.

DENVER, COLO.

Coal operators adopt maximum price effective Sept. 1. Strike threatened at the mines.

Colorado coal operators at a meeting the last of July adopted a maximum price of $3 a ton for mine-run and $4.25 for lump and prepared coals to be effective from now to Sept. 1. This decision is in line with action by coal operators and government officials in the East.

Placards announcing the Colorado Fuel and Iron Co.'s determination to continue to operate under the so-called Rockefeller plan of industrial representation for adjustment of differences with its employees and not to recognize the United Mine Workers of America have been posted in all the coal camps of the company. Notice that the United Mine Workers of America would call a strike at the company's mines was filed with the state industrial commission a month ago.

SEATTLE

Increases in freight rates on coal advance prices Announcement of Government regulation retards early buying. Steam coal takes big jump.

The granting by the public service commission of a 15c. increase per ton in freight charges on coal hauled over the railroads of the state is reflected in the advance in retail prices. This, together with a curtailment in orders due to the Government's announcement of the regulation of coal prices, leading buyers to believe they will be able to secure coal cheaper, has created an unstable market.

Steaming coal advanced a dollar a ton the first of August, going from $4.50 to $5.50 a ton at the bunker tips as compared with $3.50 a ton at the end of last winter. Later the price went to $3.75 and then to $4.50. The majority of the Puget Sound boats burn coal, and owing to a scarcity of oil those who changed their boilers over to burn that are now considering rechanging them to coal burners.